



Turning Size to Competitive Advantage

The Prince Edward Island BioAlliance Story

PRINCE EDWARD ISLAND
 **BioAlliance**

In addition to increasing revenues, employment opportunities, and the number of bioscience companies based in PEI, the Bioscience Cluster has enjoyed significant success in advancing its international reputation – all with the potential to attract more investment, research excellence and sustainable employment to PEI.

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Introduction

In today's competitive and increasingly global economic environment, farsighted business leaders understand that innovation is paramount to their ability to adapt and thrive. Some have embraced a cluster model to connect necessary partners and enable innovation and economic growth. Establishing working relationships among researchers, businesses, governments, they attract new businesses, capital, and skilled human resources to create innovation ecosystems that improve the bottom line for all stakeholders.

Prince Edward Island – with a population of 145,000, undoubtedly small in scale – is turning its size to competitive advantage by creating distinctive and nimble economic partnerships that are helping to drive success. Its Bioscience Cluster, in particular, has demonstrated an up-sized skill for innovation and knowledge-based economic development. Rooted in science-based manufacturing as early as 1970, the PEI Bioscience Cluster has undergone significant growth in the past decade, now employing some 1300 people and generating more than \$165 million in annual sales.

There are currently 42 bioscience-based companies operating in PEI. They range from contract manufacturers for major pharmaceutical companies, to those developing natural and organic products for nutraceuticals and functional foods, personal health care and the cosmetic industries, neurological diseases, fish health and animal health products. Its inventive cluster business model incubates thriving local startups while attracting some of the world's most highly-regarded bioscience companies, including BioVectra, Elanco Animal Health and Sekisui.

An examination of the Cluster's key milestones, initiatives and best practices reveals the unique enabling factors contributing to these achievements in a relatively short period of time. They include a

shared economic vision; leadership encompassing industry, government, academic, research, and financial communities; a strategic focus on competitive niches and existing capacity; partnerships and collaboration regionally, nationally and internationally; a long-term perspective; and the support of government at all levels. In addition to increasing revenues, employment opportunities, and the number of bioscience companies based in PEI, the Bioscience Cluster has enjoyed significant success in advancing its international reputation – all with the potential to attract more investment, research excellence and sustainable employment to PEI.

Rooted in science-based manufacturing as early as 1970, the PEI Bioscience Cluster has undergone significant growth in the past decade, now employing some 1300 people and generating more than \$165 million in annual sales.

A new multi-year strategy for the growth of the Cluster is being pursued that, with the right private/public investment, could provide 2000 jobs and generate more than \$300 million in annual revenues by 2019. Achieving these goals requires an ongoing commitment to build on the expertise, expansions, and new companies, products, and markets already in development while creating additional industry support channels, investments, and international credibility. The pivotal question going forward for the Cluster remains: how can a small and relatively remote jurisdiction such as Prince Edward Island continue to strive and excel in a fiercely global competition for the top bioscience intellectual property, brainpower, and capital so essential to its success?



**Early Days
Establishing the Foundation for the PEI BioScience Cluster
(1998-2005)**

Antecedents to the PEI Bioscience Cluster date back several decades. They begin as early as the 1970s launch of Diagnostic Chemicals Ltd. by Regis Duffy in a Charlottetown garage. Recognizing a need for large-scale, reliable, diagnostic testing, DCL became a leader in the field, building a diagnostic plant with early-stage provincial support and an expanding client base of medical facilities globally. Anticipating demand early on, DCL produced intermediates for the diagnostic marketplace, creating a chemical division – manufacturing synthetically challenging chemicals, biochemicals, intermediates, and active pharmaceutical ingredients – that became known as BioVectra DCL. In 2007, Genzyme Corp., a global biotechnology company, acquired DCL’s diagnostic division. In 2011, in yet another example of a small innovative company garnering global attention, Genzyme Diagnostics PEI was acquired by Japanese-based Sekisui Chemical Company Ltd. – headquartered in Japan, with 210 associated companies, 20,000 employees worldwide, and 9 billion USD in annual sales.¹

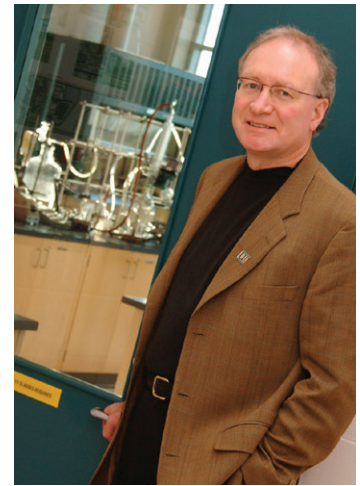
In 2013, decade-long customer Questcor Pharmaceuticals acquired BioVectra Inc. to secure trade secrets, diversify its product base and expand marketplace presence. BioVectra continues to operate independently, retaining staff and senior management and expanding its Charlottetown facilities, with the resources to build technical capability and accelerate business connections. In 2014, Questcor was acquired by Mallinckrodt Pharmaceuticals, a global leader with 5500 employees worldwide and commercial presence in 65 countries. BioVectra subsequently announced ambitious plans to invest some \$30 million in new facility acquisitions, including fermentation capacity expansions, and a production plant in Nova Scotia.

In the same way, it was Aqua Health Ltd.’s 1980s buyout of a portfolio of veterinary vaccines from Canada’s

Connaught Laboratories that ultimately attracted Novartis to PEI. Novartis Animal Health acquired Aqua Health in 2000 and with a \$29 million investment and a staff of 120 at its Victoria research facility and Charlottetown vaccine manufacturing and distribution plant, hosted R & D, production, quality assurance and control, supply, and logistics activities in PEI. Elanco, Eli Lilly’s animal health company, acquired Novartis Animal Health, maintaining a PEI presence and making its animal health business the second largest in the world. A powerhouse within the ranks of global aquaculture, Elanco Aquahealth PEI is an international innovator, creating vaccines and pharmaceuticals to prevent viral and bacterial fish diseases and control sea lice. It was first in the world to license vaccines for the hemato-poietic necrosis and infectious salmon anemia viruses – paramount to the recovery of the Chilean Atlantic salmon industry.²

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But while these early examples built capacity in higher technology opportunities and export markets, and ultimately attracted international attention to PEI, it is important to remember that the term “bioscience” was largely nonexistent in PEI in the 1990s. Some very interesting conversations were occurring toward the end of the decade, however, that would ultimately pave the way for the Island’s emerging Bioscience Cluster. Rory Francis, then PEI Deputy Minister of Agriculture, and a number of colleagues in government, academia, and the business sector, were highly aware of a critical



mass of research centres in close proximity to Belvedere Avenue in Charlottetown – including the University of Prince Edward Island, its Atlantic Veterinary College, the Food Tech Centre, the Canadian Food Inspection Agency, and AgriFood Canada – and began to explore what those collective research synergies might yield.

By 1997-1998, an informal think tank had developed, facilitated by Francis; Dr. Katherine Clough, Director of Policy and Planning for the Department of Agriculture, Fisheries and Forestry; and Robert Paterson, an “Islander by Choice,” consultant, and futurist. All were mindful that PEI’s long-held tradition of economic dependence on farming, fishing and forestry was under threat as prices for commodities sank and costs continued to rise. To revive these industries, it was posited that innovative new products must be developed and harvested, and sold in higher-value markets. With a viable PEI research infrastructure already in place along the Belvedere corridor, it was time to consider new life-sciences commercialization

opportunities related to agriculture and food. As research, business, academic and government leaders were invited to the table and encouraged to “think outside the box,” a number of new initiatives were explored, including a Monsanto project related to GM seed potatoes, and a PEI Food Strategy seeking a stronger brand and higher value niche for sustainable PEI food products.³

With promising expansions into aerospace and value-added manufacturing and biotechnology, the PEI economy was continuing to grow and diversify. In 2000, the Island’s “bioresource sector” was recognized as one of six growth areas in the Provincial Government’s economic development strategy, *Bridging Tradition and Technology*. It called for a new and integrated approach to developing the sector through sustainability-related research and innovation.⁴

Upon the arrival of new UPEI President Wade MacLauchlan in 1999, the stimulus for this type of



forward thinking shifted to the University. There, Dr. Regis Duffy, one of PEI's most successful and respected chemical engineering entrepreneurs, was the chair of the UPEI Board of Governors. Together, MacLauchlan, Duffy, Premier Pat Binns and others promoted the expansion of PEI's research capacity, turning good science into good business.⁵ The goal was to establish the self-reliance and sustainable prosperity that would ensure future generations of Islanders found meaningful employment locally and newly developed PEI products would be sold around the world. Central to this scenario was the conviction that the National Research Council – the Government of Canada's premier research and technology organization – must be persuaded to establish a research institute in Prince Edward Island, with the ensuing attention and top-tier resources it would bring.

To create a compelling case for this NRC proposal, the PEI Bioresources Technology Cluster Roadmap Steering Committee was struck in 2002 to study the merits of developing a bioactives cluster in PEI. The



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Committee determined that quality marine and plant bioresources were locally available; university and government research organizations exhibited strengths in marine bioresources, agriculture, and some aspects of bioactives; the growth of PEI companies processing bioresources for high-value products continued; the proximity to cluster participants in the North East was an asset; and the Province's emphasis on sustainable bioresources remained. However, it also noted the lack of bioactives discovery organizations with knowledge of local marine and plant species; research organizations



focused on deriving bioactives from local bioresources; and pharmaceutical companies and suppliers in the field of bioactives.⁶

The Roadmap Steering Committee combined the talent of industry executives, government experts, academic representatives, consultants and other community stakeholders to recognize and project new potential directions for technology advancement and economic development – the sort of collaborative perspective that would continue to define the Cluster as it evolved. After considering some 100 potential opportunity areas and a more detailed study of 10 designated areas of specific note, the Committee concluded that PEI's marine and agriculture industries could successfully serve as a foundation for a knowledge-based bioactives cluster.⁷ The Committee subsequently determined that the Cluster should focus specifically on technologies and products related to bioactive compounds and their application to human and animal health and nutrition; and bioproducts converting biomass to value-added

products related to energy, materials, non-food crops, and environmental sustainability.⁸ The Committee also developed a common vision to guide the endeavours necessary for the growth of the Cluster.

When the NRC Institute of Nutrisciences and Health was subsequently approved in 2003, it created a “magnetic pole” for PEI research and development within what came to be known as the Bioscience Cluster.⁹ Multiple partners were involved in its funding, with a five-year \$20 million operating budget approved by the federal government, and the Atlantic Canada Opportunities Agency (ACOA) and the Province of PEI providing funding for construction of the 57,000-square-foot facility. The building was consciously designed to maximize interaction and collaboration of the researchers and private-sector industrial partners, with incubation space on all three floors. Emerging companies were able to develop their programs with reduced capital outlay through access to the facilities, equipment and research collaboration offered by the Institute. After a period of

incubation, the industrial partners could exit the NRC facility and continue to develop and expand within other facilities.

The road mapping exercises also ensured that the talent model for the NRC Institute of Nutrisciences and Health reflected a nontraditional approach. Housed on the UPEI campus, the Institute was staffed by a unique breed of scientists attuned to industry with direct hands-on science-based industrial experience. Rather than conventional research silos more common in larger clusters, the Institute drew on a horizontal network of expertise, promoting economic development within a relevant and collaborative research platform that furthered successful business applications.¹⁰

The NRC's presence significantly strengthened the research base of the Cluster and provided a research stimulus that led to new economic opportunities and spin offs. In a five-year period, UPEI saw a 425 percent increase in the value of R&D conducted at the Institute. Along with AVC, it vigorously pursued the creation of five prestigious Canada Research Chairs. Ten PEI bioscience projects (Rounds I and II) received \$29.8 million in support through ACOA's Atlantic Innovation Fund, and by 2005 an AIF Round III had been incorporated. Agriculture and Agri-Food Canada established a research focus on knowledge and technologies related to sustainable crop production, collaborating with the NRC and UPEI to create value-added bio-based products and processes from new and current crops. At the same time, the PEI Food Technology Centre successfully expanded its expertise and capacity for novel extraction technologies.¹¹

With no comprehensive strategy in place to guide the growth and development of the emerging Bioscience Cluster, a group of industry, academic and government leaders convened in 2004 to coordinate the

development and implementation of a strategic plan. In March 2005, the *Strategy for Prince Edward Island Bioscience Cluster Development* was launched, while introducing the newly formed Prince Edward Island BioAlliance Inc., led by Executive Director Rory Francis, with its mandate to facilitate implementation of the strategic plan.

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This strategy built on the success already enjoyed by the PEI Bioscience sector which by 2005 employed 400 people in private sector businesses with annual revenues of more than \$60 million.¹² It also recognized the existing factors that encouraged the emerging sector, including a growing R&D base; commitment from all levels of government; public policy support; and the Province's natural capital of agri-food, fisheries, marine, and forest resources. A careful assessment of global trends and an appropriate bioscience niche for Prince Edward Island identified technologies and products related to bioactive compounds and their application to human, animal and fish health and nutrition as the most appropriate focus. However, bio-based business development across a full array of technologies and applications was also strongly encouraged.¹³

The Plan's goals for Cluster development included increased bioscience R&D in public/private sectors;

improved access to public/private financing for biotech commercialization and new product development; and a stronger economic impact in PEI. In addition, it was essential to increase the availability of qualified human resources in management, technical, and scientific knowledge areas; improve the public policy environment; and enhance Cluster recognition and collaboration within the Cluster and other bioscience clusters nationally and internationally. Five-year development targets set included increasing R&D expenditures from \$15 million to \$40 million; private sector employment from 400 to 1000; private sector revenue from \$60 million to \$200 million; and expanding public/private investment in infrastructure and R&D within a growing internationally competitive private sector.¹⁴

The 2005 strategy was defined by a set of enabling conditions that continue to differentiate the Cluster and its success. Paramount was a shared economic vision based on a spirit of collaboration that shaped industry-research partnerships, human capital investment, research excellence and commercialization, market-driven business development, and immigration of new skills. It required that credible leaders from industry, government, academia, research and the financial community work closely together to ensure a common strategic focus on competitive niches, capacity and results. Because of PEI's size and geographic location, collaborative industry-research partnerships and networks with strong communication links were imperative, extending regionally, nationally and internationally. A realistic understanding that success takes time, along with a commitment to long-term achievement results, were reflected in the Cluster's propensity to celebrate measured milestones and collective accomplishments. Also critical was maintaining government support at all levels, ensuring funding for R&D infrastructure and basic research, early stage seed capital and labour and skills development, along with

a conducive regulatory, taxation, and business-attraction environment.¹⁵

PEI BioAlliance Inc. played a pivotal role in facilitating collaboration and growth within this network of individuals and organizations building the bioscience-based economic sector and helping it achieve its goals. From its creation, it focused on developing common language; building trusting relationships amongst businesses, researchers and partner agencies; facilitating new business development and prospecting strategies; mentoring early-stage companies; and creating bio-networking opportunities. The BioAlliance Board of Directors, enhanced by the credibility of its first chair Regis Duffy, included the presidents of the University of Prince Edward Island and Holland College, CEOs of bioscience companies, and key research and government leaders. It benefited early on by reflecting Duffy's values of working beyond self-interest, focusing on the larger benefit, and investing in long-term success.



An important additional step in 2005 was the completion of an early human resources “snapshot” of the Cluster's labour market. The *Bioscience Human Resource Strategy* assessed labour supply and demand; education and training needs; the inventory of current employees; and key recruitment and retention factors when bringing bioscience companies to PEI. Its strategic recommendations included expanding mentorship and co-operative learning opportunities; refining immigration policy; building links between industry and higher education; sharing HR best practices with Cluster companies; and creating a central database for job seekers to post resumes and seek employment.¹⁶



**An Emerging Pillar of the Economy
(2006-2011)**

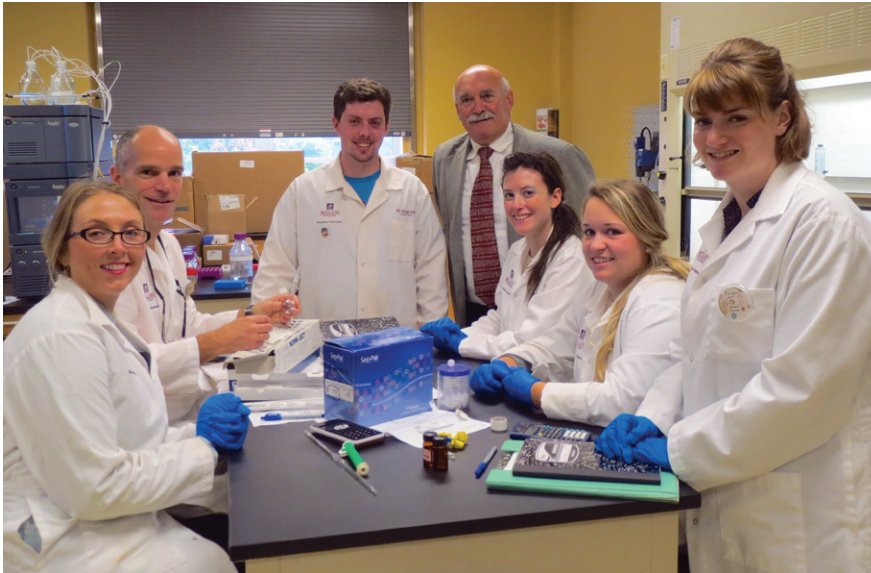


By 2006, growing provincial support for the Bioscience Cluster led to a comprehensive tax incentive package to encourage established bioscience companies to relocate to PEI and bolster the growth of those already operating there. With bioscience companies of more than 10 employees and a \$750,000 annual payroll receiving a full rebate on provincial corporate income taxes for up to 10 years, the rebated money was targeted to create additional high-paying jobs and opportunities within the sector.

With the release of the provincial government's 2008 five-year economic strategy *Island Prosperity: A Focus for Change*, the Bioscience Cluster was recognized as one of PEI's four key economic sectors. Building on the already well-established marine and agricultural resources of the Island, the Bioscience Cluster would take the next steps by creating "innovative and competitive value chains extending from the fields, forests and sea to supply highly sophisticated food and

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health products for the global market.¹ Along with the Information Technology, Aerospace, and Renewable Energy sectors, Bioscience would share in a \$200 million provincial investment over five years in people, innovation, and strategic infrastructure. Recognizing the rapid growth already evident in the Bioscience Sector, the Province looked for further critical mass by 2010 in HR development, private sector capacity, and strategic infrastructure that would allow the Cluster to compete effectively at the international level.²



A key goal was its advent as a nationally recognized center of biotechnology excellence supported by a new PEI BioCommons Research Park in Charlottetown. An anchor facility with a research and business focus, it would provide technology platforms and turnkey incubator facilities to advance the Bioscience Cluster's commercialization and development efforts.³ The Province also initiated other strategic investments to promote innovation and research including an annual Premier's Medal for Innovation; Graduate and Post-Doctoral Fellowships; Innovation PEI Research Chairs; and Innovation Investments.

Indicative of the level of Provincial government support for these efforts, a new Ministry of Innovation and Advanced Learning was established and Dr. Michael Mayne chosen as Deputy Minister, overseeing the implementation of the Island Prosperity Strategy. Mayne, Island born and an international authority in neurological disease, was previously the Director of Research for

the NRC Institute for Nutrisciences and Health when it officially opened in 2007 – and where he forged valuable research- and service-based partnerships with academic, industry and government colleagues.

Honouring the landmark contribution of Regis Duffy to the sector and the University of Prince Edward Island, the building housing the NRC Institute for Nutrisciences and Health was named the Regis and Joan Duffy Research Centre in 2008. The Regis Duffy Bioscience Fund, supported by BioVectra with an initial capital investment of \$1 million, was also created to invest in bioscience-related businesses nearing commercialization and provide guidance to ensure emerging businesses succeed.

To continue building the human resources necessary to sustain a rapidly growing Bioscience Sector, new programs were launched at Holland College and UPEI. Dr. Michael Gibson, a biological engineer from the



University of Guelph, was recruited by Holland College to design and direct a Bioscience Technology program to create the biotechnologists needed to support the Island's emerging bioscience sector. The program's graduates mastered scientific theory and hands-on laboratory experience – related to pharmaceuticals; nutraceuticals; and environment, food, and agricultural sciences – preparing for careers in a bioscience lab or a biotech-based manufacturing or production facility. The Bioscience Cluster – which lobbied for the program's creation – was actively involved in an advisory capacity, provided on-the-job training, and enthusiastically recruited its graduates. Within five years, the Holland College program was heralded by *Maclean's* magazine as one of 2011's "Red-Hot Postgraduate Programs" in Canada.⁴

UPEI researchers – often collaborating with industry partners and utilizing undergraduate and graduate

students, successfully competed for ACOA Atlantic Innovation Fund awards and transformed their work into commercial products through technology and knowledge transfer. The University's research, and research funding, enabled the creation of a number of spin-off businesses and licensing agreements. Some 550 students received more than \$5.3 million in employment income from research funding from 2009-2011 and were actively engaged in the generation of new knowledge and gaining valuable practical experience. Upon graduation, many took their place in the Island's bioscience labs.

In addition, UPEI introduced a new MBA program with a specialized stream in Biotechnology Management to promote a successful spectrum of bioscience research, innovation and commercialization. In its state-of-the-art new Business School building, UPEI also launched the Centre for Enterprise and Entrepreneurship with resources for training,

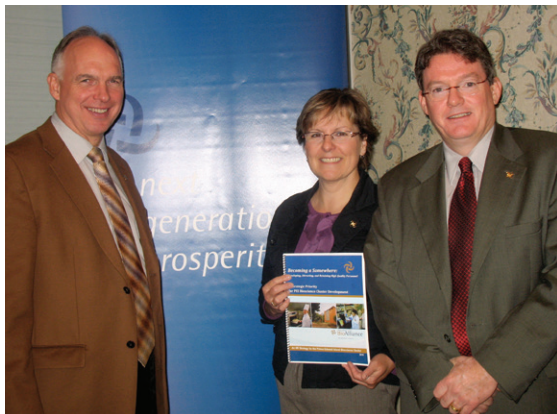


The Kerr Lab and Nautilus became a strategic technology platform and a source of credibility for UPEI and PEI's Bioscience Cluster, developing national and international relationships with other research institutes and private sector companies that have generated additional investments and economic development.

networking, incubation, business development, conferences, and biotechnology industry events.

With its early investment in capacity-building projects – including the Atlantic Canada Network for BioActive Compounds; the Centre for Aquatic Health Sciences; the Centre for BioMedical Research; the Centre for BioActives Valuation; and the FoodTech Centre's Extraction Technologies Program – the ACOA Atlantic Innovation Fund established vital technology platforms that evolved into key components of the Cluster's technological expertise and market focus.⁵ AIF awards significantly increased R&D investment in the PEI sector, more than doubling its outlay from 2001-2009. Its HR-related contributions were particularly impactful, used strategically to attract high-quality personnel with a multiplier effect and delivering a well-appreciated vote of confidence to the emerging Cluster.

A case in point was the 2007 recruitment of Dr. Russell Kerr, Canada Research Chair in Marine Natural Products. Kerr came to UPEI from Florida Atlantic University with his 14-person lab, influenced by an AIF award to UPEI to establish his team within the NRC Institute for Nutrisciences and Health. That lab attracted more than \$6 million in research funding, and Dr. Kerr soon established Nautilus Biosciences Canada Inc., a commercial vehicle for taking marine natural products to the health and nutrition market. The Kerr Lab and Nautilus became a strategic technology platform and a source of credibility for UPEI and PEI's Bioscience Cluster, developing national and international relationships with other research institutes and private sector companies that have generated additional investments and economic development. Kerr subsequently became Chair of the PEI BioAlliance Board of Directors, providing valuable leadership to the Cluster as it became increasingly self-sustaining.⁶



The 2009 BioAlliance report *From Collaboration to Commercialization* provided a snapshot of leading Cluster developments since 2005. The Cluster now employed 750 full- and part-time people, more than half in 25 private companies, the rest in a dozen academic, research and government organizations. Annual revenues exceeded \$63 million, with 90 percent in export sales. The number of bioscience companies increased by 50 percent in just three years. And the Atlantic Veterinary College neared completion of a \$45 million expansion to house 14 centres of expertise – including the Atlantic Centre for Biomedical Research, the Centre for Aquatic Health Science, and the AVC Lobster Science Centre.⁷

Canada's Smartest Kitchen, the R&D arm of Holland College's acclaimed Culinary Institute of Canada, was founded in 2009 to deliver an innovative range of food production development services, from concept development to market entry, for the agri-food, fisheries, and functional food sectors. It blended culinary expertise, advanced technology capabilities, and food science knowledge within a network of businesses, research organizations, academic institutions, and government agency partners.

The 2010 publication of *Becoming a Somewhere: Developing, Attracting, and Retaining High Quality Personnel* was initiated by the PEI BioAlliance to build on the 2005 *BioScience Human Resource Strategy* and was fully funded through the Canada-PEI Labour Market Development Agreement. The BioAlliance Human Resources Working Group, established in 2005, oversaw this new study which analyzed current and future HR needs within the PEI Bioscience Cluster as well as regionally, nationally and internationally. Working with an understanding that a skilled workforce is essential to ensuring Cluster competitiveness, it identified three primary HR goals within a comprehensive Human Resources strategy: support recruitment and retention of quality people; provide HR support to bioscience companies; and encourage skills development in bioscience.⁸

Understanding PEI had a larger percentage of small companies than other Canadian regions – with all its inherent HR challenges, and that a shortage of skilled and experienced labour continued to be a factor within the sector globally, the 2009 Strategy proposed several deliverables. These included branding PEI as a destination of choice for promising talent; helping transition new employees and their families to the local community; assisting bioscience companies to access skilled labour; providing them guidance on recruiting, retaining, and managing staff; and facilitating employee skill development and bioscience education.

With HR challenges growing as the Bioscience Cluster continued to expand, the BioAlliance launched a quarterly report tracking recruitment and retention statistics and created an HR toolkit to ensure companies established an effective foundation with their teams.



In this period, the BioAlliance also established successful *VetHealth Global* and *BioTechnology and Human Health* conferences attracting global businesses, leading scientists and innovative technology to PEI while extending the province's influence in the global economy.

VetHealth Global, PEI's biennial international animal health and nutrition business conference, continues to explore market trends, global regulatory issues, and innovative developments related to companion and food animal health and nutrition. It attracts senior executives, investors, regulators, and researchers from around the world and provides an opportunity to showcase PEI's

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innovations in animal feed additives, fish vaccines, diagnostics, and veterinary medicine. The annual international conference on neurodegeneration, now called *NeuroConX* explores developments in the treatment of neurological disease and connects PEI researchers and companies to the world.





ISLAND ABBEY FOODS



JOHN ROWE
ISLAND ABBEY FOODS



SUSAN ROWE
ISLAND ABBEY FOODS



Building on Success and Looking to the Future
(2012 and beyond)

In 2012, the BioAlliance Board of Directors approved a longer-term view of the Cluster's development and a renewal of commitment to an updated set of strategies to achieve success. The result was the launch of a new three-year strategy for Bioscience Cluster development entitled *Next Generation Prosperity: Strategy for Prince Edward Island Bioscience Cluster Development 2012-2015*. Mindful of the significant growth the Cluster had already achieved since 2005, the Board decided to guide priorities and resource allocation during the Plan's next three-year period by identifying Cluster growth targets that were ambitious, yet attainable. Expansion internationally within the highly competitive private sector was a priority, as well as increased PEI Bioscience Cluster recognition as a leading international centre for bioactives-based health product development.¹ As a result of these efforts, by the end of 2015, more than 40 bioscience-based companies employing some 1300 people and generating more than \$150 million in annual private sector revenue were operating in PEI.

New Generation Prosperity was unveiled on September 14, 2012, at the recently opened PEI BioCommons Research Park. Even though the Bioscience Cluster had been developed during one of the harshest economic times in Canada, it was evident it had achieved significant results for its partners and the economy of Prince Edward Island. Successive provincial and federal governments continued to be active participants in these efforts, and a sustained commitment to its vision was an important determinant of success.

Although the BioCommons Park was very early in its development, the \$30 million campus-style facility with 65 acres near historic Upton Farm was already home to Bioscience Cluster companies. Island Abbey Foods' new 12,000-square-foot manufacturing operation allowed the company to more than quadruple

production capacity, expand its international markets, and diversify products with new dried maple and agave platform technologies.² OmniActive Health Technologies (Canada) Limited also established its North American R&D Centre in the BioCommons Park, choosing Charlottetown over Chicago. Proximity to the National Research Council, UPEI, and the Atlantic Veterinary College as partners, with support from the NRC Industrial Research Assistance Program and ACOA accelerated OmniActive research and made capital investment significantly less.³

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Moving forward, the Cluster and the BioAlliance Board of Directors were intent on expanding the priority development of a Bioresource Commercialization Accelerator within the Park, including business incubators, a cGMP scale-up facility, and commercialization support services.⁴ An important step in that direction was an early virtual incubator model developed by the BioAlliance and led by Dr. Don Ridley, who had been involved with the Cluster in a variety of capacities since the Cluster road mapping exercises in 2002. Mentoring emerging bioscience companies from their earliest stages, this incubator model helped ensure they had the business and science acumen necessary to realize their development and commercialization goals.



The October 15, 2014, announcement that the PEI BioAlliance had been chosen one of Canada's top accelerators and incubators – and one of only two related to bioscience – was a striking indication of the bioscience sector's substantial progress in just ten years. A total of \$7.6 million over five years from public and private sources was directed to *Emergence* – the PEI BioAlliance's new bioscience business incubator. That included up to \$3.8 million from the Canadian Accelerator and Incubator Program (CAIP), delivered through the National Research Council of Canada's Industrial Research Assistance Program (NRC-IRAP). With the capacity to build on its earlier virtual incubator model led by Dr. Ridley and these significant new resources, *Emergence* was able to ensure early on that start-up and growth-stage companies alike were innovating quickly and improving their probability of success.

Defined by its focus on “Collaboration to Commercialization” and a distinctive three-pillar approach, *Emergence* launched its Critical Path

Mentorship Program (CPMP) – inspired by an innovative MIT team-mentoring model – along with specialized services and strategic networking through the sector's rapidly growing global relationships. Within one year, *Emergence* was providing 27 member companies and 22 in pre-incubation with customized resources and expertise to expedite commercialization, access private capital, and discover new markets nationally and internationally. Company specializations ranged from agri-food and clean technology to natural health products and pharmaceuticals for human, animal and fish health.

The scope of the PEI bioscience sector's continuing growth in light of the increasingly competitive international community reinforced the all-important question: how could a small and relatively remote jurisdiction such as Prince Edward Island continue to strive and excel in a fiercely global competition for top bioscience intellectual property, brainpower, and capital? The answer – enshrined in the Cluster's value



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proposition and already evident in its progress over the past 10 years – is by recognizing its unique strengths and opportunities to differentiate, and then executing relentlessly.⁵

Emphasis on the unique attributes inherent in the PEI Cluster – an emphasis on collaboration; common strategic focus; timely access to decision makers; shared resources; ability to adapt at an accelerated pace; proximity to key academic institutions and research

centers; customized financial risk management; quality of life; and the combination of relevant and innovative research with a strong business orientation – continue to define its success. Faster to market is a key differentiator, “based on the Cluster’s customized and coordinated approach to working with companies that reduces development time, costs and time-to-market, while reducing financial risk for public and private investors.”⁶

The Cluster’s decision early on to focus on the research, development, and commercialization of bioactives-based human and animal health and nutrition products has produced tangible results. “It has driven the Cluster’s choices and priorities as they relate to research platform development, company attraction, human resource development, infrastructure priorities, and support services.”⁷ The Cluster’s private sector leadership; bipartisan support; commitment to financial accountability; sustainability in funding; and continuous reinvention have been ongoing attributes of this commonly held vision.



PEI BioAlliance Inc. and its Board of Directors continue to play an important role as the “mechanism for aligning vision, setting priorities, and allocating resources to achieve the goals of the PEI Cluster.”⁸ Maintaining the credibility of the BioAlliance partnership and operating model has been a differentiator and unique selling feature of the PEI Cluster’s collaborative environment.

Current BioAlliance Board Chair Russ Kerr, who chose to migrate from thriving Florida biomedical and marine biotechnology to PEI’s Bioscience Cluster, knows firsthand that size can be turned to competitive advantage.

“The scale in Florida was immense, but there was no sense of community,” says Kerr. “There was little incentive to work together, and the competition was overt.” Interviewing at UPEI, he was impressed by local support for developing companies and the world-class infrastructure for natural products research. “The BioAlliance literally knocked on my door and wanted to

know how they could help me establish my company here. Working with them, I came to understand the benefit to being small. Where else can you arrange a meeting with key decision makers and funding agencies within a week and receive a favorable outcome? It happens here in PEI, which is why I intend to stay.”⁹

Through the ongoing development process of the PEI Bioscience Cluster, it is gratifying to discover that knowledge-based economic development can serve as a key to growth in diverse communities throughout the country. Outside the highly urbanized centres, successful regions such as Prince Edward Island are demonstrating that the will and foresight to develop high quality infrastructure and partnerships – embedded in the intellectual capital of thriving universities and colleges, and driven by a commitment to mutually advantageous collaboration and strategic investment – can create vibrant models of innovation and economic development that will continue to define future prosperity and growth.

Maintaining the credibility of the BioAlliance partnership and operating model has been a differentiator and unique selling feature of the PEI Cluster's collaborative environment.

Notes

- 1 Margaret Magner, "Reinventing Opportunity," *The Guardian*, March 2, 2013.
- 2 Margaret Magner, "A Powerhouse in Global Innovation," *The Guardian*, January 27, 2013.
- 3 Margaret Magner interview with Rory Francis and Don Ridley on the early days of the PEI Bioscience Cluster, January 24, 2014.
- 4 *Bridging Tradition and Technology: An Economic Development Strategy for the Province of Prince Edward Island*, (Charlottetown, 2000), 4.
- 5 Robert Paterson, "Innovation and Value on PEI," Trusted Space, January 17, 2007, http://smartpei.typepad.com/trusted_space_science/2007/01/innovation_valu.html.
- 6 *A Roadmap for the Sustainable Development of Bioresources: Bioactives for Prince Edward Island and Atlantic Canada*, Final Report, Proposal for PEI Bioresources Technology Cluster Roadmap Steering Committee, (Charlottetown, 2002), 11.
- 7 *A Roadmap for the Sustainable Development of Bioresources*, 1.
- 8 *Strategy for Prince Edward Island Bioscience Cluster Development*, PEI BioAlliance, (Charlottetown: 2005), 6.
- 9 *Strategy for Prince Edward Island Bioscience Cluster Development*, 7.
- 10 Rory Francis/Don Ridley interview, January 24, 2014.
- 11 *Strategy for Prince Edward Island Bioscience Cluster Development*, 6.
- 12 *Strategy for Prince Edward Island Bioscience Cluster Development*, 5.
- 13 *Strategy for Prince Edward Island Bioscience Cluster Development*, 6.
- 14 *Strategy for Prince Edward Island Bioscience Cluster Development*, 9.
- 15 *Strategy for Prince Edward Island Bioscience Cluster Development*, 4-5.
- 16 *Bioscience Human Resource Strategy for Prince Edward Island*, ITAP (Charlottetown: 2005), 86-88.
- 17 *Island Prosperity: A Focus for Change*, Government of Prince Edward Island, (Charlottetown: 2008), 6.
- 18 *Island Prosperity: A Focus for Change*, 47.
- 19 *Island Prosperity: A Focus for Change*, 55.
- 20 Margaret Magner, "A Red Hot Path to Success," *The Guardian*, December 15, 2012.
- 21 *The Atlantic Innovation Fund: A Keystone in the Foundation of the Prince Edward Island Bioscience Cluster*, (Charlottetown: 2012), 6.
- 22 *The Atlantic Innovation Fund*, 7.
- 23 *From Collaboration to Commercialization*, PEI BioAlliance (Charlottetown: 2009), 3.
- 24 *Becoming a Somewhere: Developing, Attracting and Retaining High Quality Personnel*, PEI BioAlliance, (Charlottetown: 2010), 2.
- 25 *Next Generation Prosperity*, 8.
- 26 "PEI Bioscience Cluster Lays Out Aggressive Strategy for Growth," PEI BioAlliance Inc., accessed March 16, 2014, <http://peibioalliance.com/news-read-more.php?readmore=407>.
- 27 Margaret Magner, "Eye on the Future," *The Guardian*, December 21, 2013.
- 28 *Next Generation Prosperity*, 16.
- 29 *Next Generation Prosperity* 6.
- 30 *Next Generation Prosperity*, 7.
- 31 *Next Generation Prosperity*, 3.
- 32 *Next Generation Prosperity* 20.
- 33 Margaret Magner, "Harvesting Hope From the Sea," *The Guardian*, November 17, 2012.

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