

## **RURAL AND COASTAL: LOCAL TO GLOBAL**

### **Acadia University Strategic Research Plan 2015-2020**

Acadia University has been among the best in its category in Canada since national ratings for universities were established. We create and nurture a strong culture of academic inquiry and innovation by building on the outstanding skills of our researchers, by maintaining a focus on our core research disciplines, by celebrating the importance of student research, and by facilitating an increasingly collaborative and interdisciplinary approach to research initiatives.

Acadia's first Strategic Research Plan (SRP) was constructed in 2000 and updated in 2006. Its intent was to engage the university community in the continuing development of a strong and vibrant research community. This renewed and revised SRP continues that engagement, but also carves out a niche that situates Acadia within the Canadian research montage. It reflects the evolving values and strengths of the institution, demonstrates respect for a diversity of research choices, and names our commitment to research growth and excellence at the undergraduate and graduate student levels. It signals our commitment to serve as a driver for innovation, socio-cultural enrichment, health and wellness, and economic development in Nova Scotia, by deepening and extending our partnerships with external organizations. It does this while recognizing the value of all forms of research within the humanities, the social, physical, and mathematical sciences, and our professional schools, and by identifying strengths on which to build the research capacity required to pursue new opportunities and to enrich and expand our external impact.

Small liberal universities occupy increasingly rare but vital space in Canada. With scholars in multiple disciplines, such institutions seldom have the opportunity to establish a sizeable pool of expertise in one area. Acadia has responded to this challenge by supporting research across a range of disciplines and by encouraging collaborations with researchers at other national and international institutions, as well as partnerships with industry, government, community health and social agencies, and other external organizations. Research is becoming increasingly interdisciplinary as the questions asked become more complex and permeate porous disciplinary borders. That said, Acadia's broad commitment is to structure an environment with available resources that nurtures high caliber research programs: individual, collaborative, interdisciplinary. Nurturing a strong research culture comes not only from active faculty research programs, but also from the work of our ten formal research centres, three institutes, our library and archives, as well as our continuing investments in the development of research facilities and centres, and the programs of our Canada Research Chairs. Our students derive substantial benefits from such a rich and engaged environment and are subsequently well positioned and sought after for advanced study here and at other universities. The experience for many students is further enhanced through exposure to research opportunities with community, government, and industry organizations.

## Focusing

Decidedly rural and positioned on the shores of the renowned Bay of Fundy, within the stunning Annapolis Valley, our strategic focus – **RURAL AND COASTAL** – reflects our geography and its people, as well as the international reach of many of our researchers and the impact of their work. While rural and coastal is our strategic focus, it does not confine or restrict the breadth of research that takes place at Acadia.

Our strategic focus names an evolving institutional awareness at Acadia and a commitment to contribute to the betterment of the health and life circumstances of those who live in these regions, to the revitalization and development of their communities, and to the protection and sustainability of their environments and resources.

## Objectives

The objectives of this Strategic Research Plan are:

- a. To deepen and increase research activity within the four theme areas, especially but not exclusively, as it strengthens the rural and coastal focus:
  - **Community Life, Organizations, and Cultural Diversity**
  - **Natural Resources and Environmental Resilience**
  - **Human Health and Wellness**
  - **Innovative and Enabling Technologies.**
- b. To strengthen Acadia's research culture in its breadth, foci, interdisciplinary potential, and opportunities for student engagement at undergraduate and graduate levels;
- c. To foster and expand research connections within the University and between Acadia and its numerous and expanding regional, national, and international partners and collaborators;
- d. To expand Acadia's contributions to the economic and cultural development of rural and coastal regions locally, nationally, and globally.
- e. To encourage innovation at Acadia and the potential for such innovation to have a positive impact locally, nationally, and globally;

In so doing the SRP ensures that the full range of research activity of a faculty with diverse interests is valued and accommodated. It integrates research preparation for undergraduate and graduate students. It recognizes the value of collaborative and interdisciplinary research activity which leads to the creation of innovative theories, practices, and solutions. It acknowledges that high quality interdisciplinary research builds on a strong foundation of disciplinary excellence. Underlying the Plan is the conviction that opportunities to associate research activity with

teaching and service to the greater community constitute an institutional strength and responsibility.

As evidenced by the focus of the Plan, Acadia is committed to fostering and encouraging research that contributes to the betterment of rural and coastal regions. This will involve not only supporting current research programs that have rural and coastal relevance, but also nurturing research clusters across campus that work in and with communities and external organizations to collectively address problems and identify opportunities.

To accomplish this, Acadia will continue to develop and maintain major research facilities and initiatives that support multiple disciplines, which will build institutional research capacity and bolster our strategic focus. We will further build research capacity and impact by fostering collaborations and partnerships with other academic institutions. We will be selective in undertaking such initiatives and will ensure that best use is made of available resources, and opportunities for enhancing these, by considering the following:

- the fit with this Strategic Research Plan;
- the potential for broad, interdisciplinary participation;
- the strength and leadership of key researchers;
- the potential to strengthen undergraduate and graduate student research;
- the potential to make powerful regional, national, and international contributions; and
- the potential to contribute to economic and cultural development in rural and coastal regions.

## Themes

***Acadia's Commitment: Acadia will actively, and by diverse means, support research within these four theme areas, especially as that pertains to the sustainability, health, economic development, and cultural richness of rural and coastal regions locally and wherever Acadia researchers work.***

Across these themes, we aim to stimulate and contribute to discussions about what it means to be rural and coastal in the 21st century. While the world has seen a shift of population to urban spaces, technological change and globalization have altered our understanding of the rural-urban dynamic. This has sparked interesting multidisciplinary debates about topics such as the urban-rural interface, the death of distance from advances in technology, and relationships between centre and periphery. The complex and varying natures of these shifts are of such magnitude that no aspect of life remains untouched.

### Community Life, Organizations, and Cultural Diversity

Throughout its long history, Acadia has been intimately connected to its local communities and deeply immersed in the realities of rural and coastal life. Romanticized images associated with life in these regions call to mind simplicity, idyllic surroundings, traditional values, and hard but healthy physical work. Counter to this, research by some Acadia scholars indicates that a more common theme associated with rural life is departure and loss. Rural communities have

witnessed mass out-migrations as youth, in particular, leave for urban areas or resource-rich regions with better job opportunities. Yet, there is emerging evidence that many youth are opting to remain local in resistance to the go-elsewhere message. This points to an urgent need to deepen and utilize existing and emerging knowledge on rural and coastal communities, to actively develop sustainable circumstances that will provide opportunities for youth and others to remain in or migrate to these regions, and to work with municipal, provincial, and national political bodies in creating a rural imperative and innovative approaches to the revitalization and well-being of rural and coastal Canada, as well as similar efforts in international settings.

Understanding community and organizational life, historically and currently, homogenous and culturally diverse, is the work of a number of researchers and research programs at Acadia. Some within the social sciences and humanities conduct research that connects to community life in a plethora of ways, including aboriginal ecotourism and wine tourism, organizational and community narratives, music therapy and technology, the history of land use and settlement, community theatre, the development of sustainable food systems, cultural rituals, media studies, entrepreneurship, religious life, and the sociological, economic, and political trends affecting labour, health, and indigenous peoples.

Connected to community life is a critical mass of faculty and student researchers engaged in scholarship on cultural diversity and social justice. Several scholars across disciplines are exploring the circumstances of girls in rural communities. A related train within the social sciences and humanities focuses on the everyday experiences of individuals through the lenses of sexed bodies and gendered lives. Researchers working through the Acadia Centre for the Study of Ethnocultural Diversity, as well as many working independently, are establishing a rich scholarship on equity and diversity within schools and other organizations, and within and between communities and community groups. A particular imperative is building links with three local populations that have been historically marginalized but remain vibrant and resilient: the Mi'kmaq, the African Nova Scotian, and the Acadian communities. In addition, the work of a Tier II Canada Research Chair in Education, Culture, and Community brings a multidisciplinary focus (history, anthropology, museum studies) to the educational mandate of public institutions. This work also engages the sub-field of critical public pedagogy.

Many of these areas actively engage undergraduate and graduate student researchers. As a result, these students have opportunities to undertake research that connects with external agencies on issues of social and cultural relevance, which not only broadens their academic experience but also serves to enrich Acadia's engagement with and connection to its external communities.

### **Natural Resources and Environmental Resilience**

Acadia has a well-established strength and reputation for research related to natural resources and the environment. This is especially prominent in terms of our integrated research into ecological systems, the interaction of organisms with the environment, and the environmental implications and impacts of human activities. Research programs span the evolution of the earth over geological time to the recent and often short-term dynamics of local populations, both essential to the understanding of environmental change. This research has been greatly enhanced by the presence of outstanding facilities, most notably the KC Irving Environmental Science

Centre, a gift from the Irving family of New Brunswick. It is also augmented by the presence of three Tier II Canada Research Chairs whose work focuses on the environment: one in Environmental Biogeochemistry, another in Coastal Wetland Ecosystems, and a third in the Ecology of Coastal Environments. In addition, this theme is supported by a Chair in Ornithology whose research is housed within an ecological resilience framework. Acadia also has many formal research centres and institutes that work within this theme area and across disciplines, including the Acadia Centre for Estuarine Research, the Acadia Tidal Energy Institute, the Acadia Institute for Data Analytics, and the Centre for Analytical Research on the Environment. Off-site research facilities include field stations at Beaubassin in New Brunswick, Bon Portage Island in southwestern Nova Scotia, and the Morton Centre on the South Shore of Nova Scotia.

Of particular significance is the recognition that a growing body of research conducted at Acadia extends beyond descriptive accounts of natural resources and environmental circumstances to a focus on sustainability and development. Much work within this theme area reveals a concern for the natural environment and its resources, and the importance of applied research into environmental processes. It recognizes the deleterious impacts of climate change and the significance of understanding its origins and constructing acceptable paths forward. It pedestals the imperative of creating sustainable environments for all organisms on earth. It speaks to the complex relationship among human cultures, natural resources, and environments, including connections to human and community well-being, aesthetics, textual expression, ethical behaviour, and our historical and spiritual approaches to the environment. It also seeks means to utilize the natural environment and its resources for human benefit in ways that minimize harmful impacts and supplant non-sustainable techniques.

Acadia's approaches to natural resources and environmental inquiry are manifest in research in such areas as non-toxic insect management, developmental plasticity, animal migrations, aquaculture, tidal energy development and modelling, environmental policy, materials science, sediment deposition and mineral exploration, innovation in oceanographic technology, and research in forestry and agriculture. It also includes water quality and environmental contaminants, biofuels, waste management, biodiversity and the natural history of species of concern, the preservation of coastal wetlands and fragile Arctic ecosystems, the resilience of the Bay of Fundy to oil spills, fisheries resource sustainability, and digitizing the complete register of flora and fauna of the Acadian Forest Region.

Most of the research conducted within this theme area actively engages undergraduate and graduate students. In so doing, it provides them with rich opportunities to work with external partners that in many cases leads to thesis research that assists industry in addressing pressing issues and opens or extends innovative opportunities.

## **Human Health and Wellness**

Health and wellness are intertwined concepts. Health is a multi-dimensional condition that includes physical, psychological, spiritual, and occupational health, and its social determinants. It is a process of continuous adaptation to the many microbes, irritants, pressures, and problems of varying internal and external environments. Wellness is an inclusive concept that speaks not

only to good health, but also to quality of life and contentment with one's overall life circumstances.

Research into human health and well-being at Acadia is greatly enhanced by the presence of a Tier I Canada Research Chair in Occupational Health and Well-Being, as well as three formal research centres: the Centre for Organizational Research and Development, the Centre of Life-Style Studies, and the Centre for the Sensory Research of Food. Within the Centre of Lifestyle Studies, substantial research is being done on physical activity as a prevention and rehabilitation tool. Additionally, there are evident links through the study of contaminants to the previously-mentioned Centre for Analytical Research on the Environment. Both undergraduate and graduate students are actively involved in the research of these centres, as well as with faculty research throughout this theme area.

Broadly speaking, the multiple prongs of health-related research cluster around foods, as well as physical, social, and psychological/emotional health and wellness. They also reveal linkages to research named in other themes. Food and agri-food activity includes established areas of research such as water quality analysis and product testing, but also incorporates newer programs focusing on food security, probiotics, food citizenship, and feeding in hospitals.

Health and wellness includes excellence in research on the connection between physical activity and diabetes management, the role of relaxins in treating conditions associated with aging, physiological responses to stress, athletic therapy, applied biomechanics, cancer and infectious diseases, alcohol harms, ligament injuries, and drug abuse. Social health and wellness includes research on parent-child relationships, workplace civility, in-home care of seniors, circumstances of rural youth, infant food insecurity, and a host of disciplinary and cross-disciplinary investigations concerning equity and social justice. The results of some health and wellness research has resulted in nationally and internationally recognized programs such as the Sensory Motor Instructional Leadership Experience (SMILE) and Kinderskills. Research of a psychological and emotional thrust includes extensive work in attachment theory, personality, counselling, and sexual health.

### **Innovative and Enabling Technologies**

Innovative and enabling technologies include research conducted by some Acadia faculty members and students on the theoretical and scientific foundations of many technologies. Coupled with this is research into the pedagogical and methodological applications of technologies, and the utilization of technology in support of faculty and student research programs.

The heart of the Innovative and Enabling Technologies theme casts a double spotlight on the technologies that are present on campus to support high-quality research, as well as foundational research on the technologies themselves. These technologies cluster into information and communication technology (ICT), applications for materials science, modelling, and data analytics.

Foundational research in ICT occurs within selected units on campus, while applications, often occur across all faculties and with external partners. Researchers are studying the interactions of hardware and software and the world-wide web, the interfaces of peoples and communities with ICT technologies and how they impact broad social issues, and the role of technologies in engaging diverse cultural groups. ICT extends to research on issues of technology and public policy, political debates, production and reproduction of creative practices within the arts and sciences, and the preservation of artistic and scientific works in digital form as part of cultural heritage and workplace literacy, health, and productivity. Library and archives initiatives, including the digitization of unique local archival material and the E. C. Smith Digital Herbarium, have facilitated research across the disciplines and beyond Acadia.

The materials science, modelling, and analytics capacity areas are undergirded by two research centres and one institute: the Acadia Centre for Microstructural Analysis, the Acadia Centre for Mathematical Modelling and Computation, and the Acadia Institute for Data Analytics. The microstructural analysis centre provides a cluster of micro-analytical equipment, several of which are unique in Nova Scotia and the Maritimes. It also represents a forum for multidisciplinary research and collaboration at the interface between physical and life sciences.

Work associated within the Centre for Mathematical Modelling and Computation, and the Data Analytics Institute has application across the natural, biological, and social sciences, and in some instances within the humanities. Quantitative modelling enables researchers to describe, assess, and predict a wide range of phenomena, from subatomic behaviour to climate change. The Analytics Institute is especially focused on local agricultural, environmental, health care, and green energy issues. Beyond this, analytics covers a broad spectrum, including data management, mathematical, statistical, and machine learning methods for data modeling, and techniques for data visualization in support of decision making. The library is taking the lead in developing digital research data management services and resources to support data organization, and exploring channels through which data preservation, discovery, and sharing can be facilitated.

## **External Engagement**

Research is traditionally conceptualized as pure (curiosity-driven) or applied. Both occur at Acadia in multiple ways and have varied impacts, intentional and inadvertent. In constructing our Strategic Research Plan with a deliberate focus – Rural and Coastal – we are staking claim not only to a particular geography, but also to a commitment to apply our considerable research expertise to bring positive and powerful impacts to these regions by contributing to their cultural, economic, and environmental development. Fostering deep and meaningful relationships between and among our university scholars, library and archives, research centres and institutes, and external organizations is a critical aspect of our Strategic Research Plan.

An example of the way this happens is through Acadia's Rural Innovation Centre. With funding from the Atlantic Canada Opportunities Agency and the Province of Nova Scotia, Acadia established a combined incubation and innovation facility to nurture local start-up businesses and deliberately located them in the same physical space as three research institutes: the Acadia Tidal Energy Institute, the Acadia Institute for Data Analytics, and the Atlantic Wine Institute. The

work of these institutes is predominately focused on issues that impact rural and coastal regions. Co-locating institutes with start-up businesses creates a dynamic and synergistic environment where discussion of research and applications thrives.

Leadership in facilitating external research-related partnerships emanates from the Office of Industry and Community Engagement, a division of Research & Graduate Studies. Following from a focus group session with local industry, government, and funding agency representatives in 2010, ICE established a multiple component strategy to guide its operation. At its core, this strategy has focused on developing more personal engagement and closer relationships with industry organizations and economic development agencies which themselves work directly with businesses, and seamless lines of communication which expedite problem-solving collaborations between Acadia researchers and external organizations. The Office recurrently hosts information sessions and workshops that bring together external industry, business groups, and provincial and national funding partners, with Acadia researchers to focus on emerging opportunities and problem-solving strategies.

In recent years, research activity has evolved to include hundreds of external partners on projects ranging from large multi-partner collaborations examining the environmental effects of installing tidal turbines in the Bay of Fundy, to the art and narratives of Inuit elders, and to consulting projects involving laboratory analytical services. These collaborations frequently involve international partners. In some cases, research done by Acadia faculty has led to commercial application resulting in royalty revenues and the creation of spinoff companies. Collaborations like these are examples of applied research contributing to solutions to regional issues and problems.

Further examples of these collaborations are represented by Acadia activity levels on NSERC Engage and Engage Plus programs, which foster the development of new partnerships between researchers and companies. From its launch in 2010 to 2015, Acadia has established over 24 Engage projects, garnering almost \$550,000 for faculty and students, making us the most active of all small universities in Atlantic Canada. Other industry connections and partnerships have garnered millions in research dollars and created exceptional opportunities for both faculty and students. These include programs through the National Research Council's Industrial Research Assistance Program and the Atlantic Canada Opportunities Agency, including its Atlantic Innovation Fund and the Innovative Communities Fund.

## **Canada Research Chairs**

A principal imperative of the 2000 Strategic Research Plan was the deployment of Canada Research Chairs. The CRCs have brought extensive scholarly, technical, and intellectual expertise to the campus community and beyond. Each of these CRC positions substantially strengthens and provides scholarly leadership within their primary theme areas. With the conclusion of some Chair positions and the initiation of others, the current CRC distribution at Acadia is:

<b>Tier</b>	<b>Chair</b>	<b>Council</b>	<b>Appointed</b>
Tier I	Occupational Health and Well-being	SSHRC (Special)	2005
Tier II	Environmental Biogeochemistry	NSERC	2007
Tier II	Education, Culture, and Community	SSHRC (Special)	2009
Tier II	Ecology of Coastal Environments	NSERC (Special)	2010
Tier II	Coastal Wetland Ecosystems	NSERC	2011

As new Canada Research Chair opportunities become available, the Vice President Academic and the Dean of Research & Graduate Studies will work with Faculty deans and selection committees to actively recruit candidates whose work strengthens our rural and coastal focus, with a concerted emphasis on attracting individuals from underrepresented populations, with a particular emphasis on gender. Our progress in this regard will be reviewed as each existing Chair position nears the completion of its term and new Chair opportunities arise, with a view to ensuring that every possible avenue is explored in recruiting individuals from these populations.

### **Review and Assessment**

Assessment of this plan by the University will be accomplished in 5-year cycles, drawing on multiple benchmarks appropriate to various disciplines. Common indicators of success, including publications, awards, and honours, will be complemented by other indicators of accomplishment. This may include creative works and performances, public speaking engagements, hosting and/or chairing conferences, presentations at professional meetings and colloquia, patents, licenses, industry and government engagement, commercial start-ups, as well as other indications of public and professional interest. In addition, the year in which the SRP is being reviewed will include campus consultations.

On the direction of Senate, this process will be led by the Division of Research & Graduate Studies in collaboration with the Senate Research Committee, and will result in a report to Senate. This report will include recommendations, which may lead to modifications to the Plan.

This Strategic Research Plan was approved by the Senate of Acadia University on December 14, 2015.