

# UNIVERSITY OF PRINCE EDWARD ISLAND, STRATEGIC RESEARCH PLAN SUMMARY FOR CANADA FOUNDATION FOR INNOVATION AND CANADA RESEARCH CHAIRS

The University of Prince Edward Island adopted its current Strategic Research Plan 2008-2018, “Building on Strength, Expertise, and Excellence” in April 2008, following extensive, campus wide consultation. Since its first start plan, UPEI has had significant success in developing our strategic areas of expertise and this has resulted in the splitting of some original constellations of expertise and the addition of new areas as targets for growth and development. The specifics of those developments and plans are outlined below.

**I. PREFACE:** Since submitting its first Strategic Plan, the University of Prince Edward Island has had dynamic growth in research capacity, intensity, and success. Research funding has increased by nearly 600% since 2000 and UPEI has been recognized as first among universities in our category for percentage increase in research funding. This growth in resources has been paralleled by enhancements in infrastructure and development of graduate programs. Over this period more than \$65M has been invested in the construction of new research facilities on campus. Graduate programs have increased from three to eight and have seen a four-fold increase in enrolment.

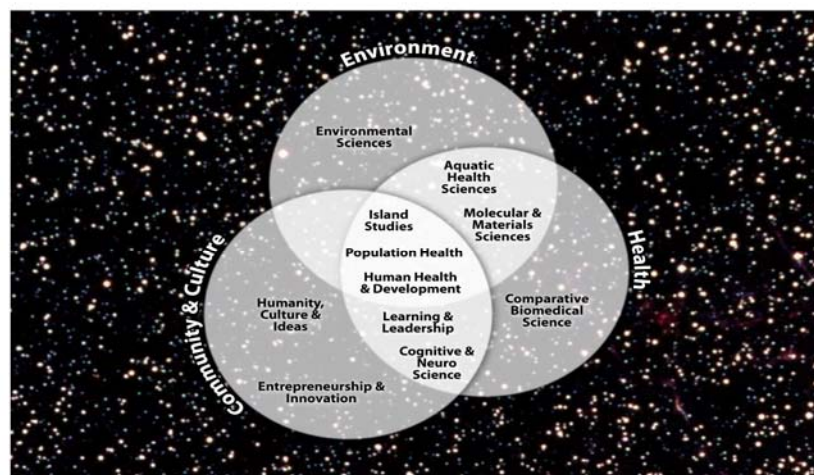
This advancement in research capacity has resulted from efforts within our areas of strategic focus where we have deployed, at present, seven Canada Research Chairs, 24 Canada Foundation for Innovation awards totalling \$ 8,314,653M, and are leading ten Atlantic Innovation Fund awards totalling \$29.6M in AIF funding (\$71M in total project funding).

In “Building on Strength, Expertise and Excellence”, UPEI articulates our vision for research as follows:

- UPEI scholars will be at the forefront of research excellence regionally, nationally and internationally;
- UPEI will exemplify a diversity of socially, ethically and environmentally responsible research approaches;
- UPEI will be at the forefront of researcher development; and
- UPEI will exemplify innovation in research communication, knowledge dissemination, and knowledge utilization.

UPEI has organized our areas of excellence within three clusters, Health, Environment, and Community & Culture, with the interdisciplinary nature of our work reflected in the positioning of many of our strategic research constellations at the intersections of these fields as represented in the Figure below.

Our targeted pursuit of opportunities in these areas is underpinned by the University’s commitment to leading developments in technology and information management in order to provide cutting edge research tools that offer seamless access to resource discovery, data analysis, discussion forums, bibliographic sharing, and collaborative workspaces by advancing both UPEI’s virtual research environment and research repository and translating the University’s commitment to open access into a reality.



Individual & Collaborative Research Excellence at UPEI

**II. RECRUITMENT:** UPEI recruits CRC nominees in the strategic areas outlined in “Building on Strength, Expertise, and Excellence”, and employs our Chairs to expand our research capacity. To date, all UPEI Chairs have been recruited from outside of the University, as UPEI has chosen to utilize our CRCs to enhance and expand our research capacity. UPEI is committed to equity. Our interdisciplinary search committees are inclusive and our recruitment efforts target under-represented as well as main stream populations. We seek nominees for our Canada Research Chair positions through national and international advertisements and postings as well as through proactive networking to identify potential nominees from under represented populations and to build on our current success in this area. At minimum, twenty percent of our Chairs will be held by women.

### III. ONGOING STRATEGIC RESEARCH PLAN

**A. GOALS AND OBJECTIVES:** UPEI’s research strategy pursues the following broad goals: the support of research, individually and in teams, across the full spectrum of academic disciplines; the enhancement of teaching and learning by an environment rich in research and creativity; and the development of a dynamic culture of research, creativity, and innovation across the University. UPEI’s full Strategic Research plan is available at: <http://upei.ca/research/files/research>. As the province’s only university, UPEI must be a key site for and play a leadership role in knowledge-based development and in addressing the goals of the Province’s new economic strategy: *Island Prosperity - A Focus for Change* (see [http://islandprosperity.com/Island\\_Prosperty.pdf](http://islandprosperity.com/Island_Prosperty.pdf)).

**B. DEPLOYMENT:** To help achieve these goals, UPEI will continue to deploy Canada Research Chairs, Canada Foundation for Innovation awards and other strategic opportunities within constellations where they promote the development of teams of researchers comprised of scholars from more than one academic unit or discipline. These teams bridge areas of existing and emerging research strength and excellence. Supported areas of research have a demonstrable impact — in terms of benefits and reputation — for Prince Edward Island, the Atlantic Region, and Canada. Canada Research Chairs are catalysts and leaders for these constellations of researchers and Canada Foundation for Innovation awards and operating grants provide the tools needed for high-level collaborative research. Attachment A provides specifics on deployment to date.

**IV. SUPPORT FOR RESEARCH AND RESEARCH TRAINING:** The University created an office of Vice President, Research and Development and the first VP, R&D, assumed office in May 2001. Planning, administrative, and logistical support for research are provided by this office as well as the office of the Associate Dean (Graduate Studies and Research) within the Atlantic Veterinary College, and by Deans’ offices in Arts, Business, Education, Nursing and Science. The University provides direct financial support for research, including matching funds for CFI projects. It also provides facilities, equipment, and administrative support for research. Research is emphasized in undergraduate programs and as outlined in our Strategic research plan. UPEI is implementing a student as scholar approach to undergraduate learning. Graduate programs to the PhD level have been offered for a decade through the Atlantic Veterinary College and Masters level programs are offered in Biology, Chemistry, Education and Island Studies. UPEI is a partner in the delivery of an inter-institutional graduate program in Applied Health Sciences Research and has recently introduced an MBA degree focused on the biosciences. Doctoral programs are being proposed in both Materials Science and Education.

**V. PLANNING AND APPROVAL:** Our *Strategic Research Plan 2008-2018, “Building on Strength, Expertise, and Excellence”*, (<http://www.upei.ca/research/>) was developed through broad consultation and participation led by the Research Advisory Committee of Senate. Open meetings, targeted consultation and a web forum were all employed in soliciting input and response as the plan developed. Individuals and groups were invited to propose constellations of research strength (actual or potential) that encompassed researchers from more than one discipline or unit, promoted the building of research teams, showed strength or potential through a track record of peer-reviewed funding and publication, and had demonstrable impact, in terms of benefits and reputation, for Prince Edward Island, the Atlantic Region, or Canada. Drafts of the strategic research plan were circulated and the RAC revised the plan taking into

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account feedback from across the University community. The plan was approved by the University of Prince Edward Island Senate in April 2008.

In deciding where to allocate Chairs and what projects will go forward for CFI support, the President, Vice Presidents, and Deans consult with researchers and determine the timing and priority of nominations and applications. Decisions are based on the following considerations: likely impact on a research “team’s” ability to attract peer-reviewed funding, publications in peer reviewed journals, training of future researchers, and building of new research collaborations; the quality of the specific nominee for a Chair, as measured by the same criteria; the impact of the Chair, CFI or other strategic funding in Prince Edward Island, regional, national, and/or international terms, as measured by real or expected partnerships or funding relationships; and the extent to which the nominee or grant will have an impact in more than one discipline or unit.

**VI. CONSTELLATIONS OF (CRC AND CFI) RESEARCH STRENGTH AT UPEI:** The following areas encompass “constellations” of research activity which: (i) represent existing or future strengths; (ii) encompass the work of researchers from more than one discipline or unit; (iii) have a proven ability or strong potential to attract peer-reviewed funding; (iv) offer a demonstrable impact — in terms of benefits and reputation — for Prince Edward Island, the Atlantic Region, and Canada; and, (v) promise an element of team-building that will benefit UPEI as a whole.

**ESTABLISHED CONSTELLATIONS:**

**AQUATIC HEALTH SCIENCES:** Research foci in this constellation pertain to the health, distribution, conservation, and aquaculture of natural resources in aquatic ecosystems; and to the health of animal populations, including food safety and public health. Examples of these foci include clinical pathology, epidemiology, molecular biology, parasitology, pharmacology and systems analysis to better understand and diminish the impact of pathogens and other stressors on wild and cultivated aquatic animals and their ecosystems. Research extends to health and environmental risk identification and management, assessment of effectiveness of interventions, and contribution to policy decisions. Research at UPEI benefits fisheries, aquaculture, and the environment which are important in PEI, the Atlantic region and internationally.

**COGNITIVE SCIENCE/NEUROSCIENCE:** Research foci include pharmacotherapy of neurodegenerative disease, the molecular basis of stroke induced brain dysfunction, pharmacological and nutritional neuroprotective strategies in stroke, central regulation of autonomic function, vision research, behavioural studies of learning, memory and cognition, assessment of cognitive function in dementia, and the neural processing of musical grammar and multimedia. Research at UPEI contributes to local and worldwide efforts to understand and correct neurodegenerative disease, neurotrauma, and mental disorders and links with UPEI researchers’ work in the philosophy of mental health.

**COMPARATIVE BIOMEDICAL SCIENCE:** The goal of comparative biomedical research is producing knowledge that will ultimately improve the health of humans and animals. Research foci include: healthful benefits of bioactive compounds (e.g. nutraceuticals, functional foods) and development of production methods, nutrition, pharmacogenetics, development of antibiotics and antifungals, drug metabolism, pharmaceuticals, neurophysiology, neuropharmacology, neurodegenerative diseases, learning and memory, cancer, bone and orthopedic research, toxicology, molecular virology, immunology, and microbial genomics. Research at UPEI contributes to understanding of human health issues such as cancer, diabetes, stroke, Alzheimer’s, and cardiovascular disease and to a broad range of health issues affecting food and companion animals locally and abroad.

**ENVIRONMENTAL SCIENCES:** Within this constellation, research foci include: anthropogenic effects related to land use practices (habitat fragmentation, agricultural use of pesticides, sediment run off) on biotic communities within watersheds and on the quality of potable ground water; the

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health of humans, domestic animals and wildlife (such as resource based aquatic species and traditional Innu-harvested animals) as affected by environmental contaminants and infectious agents; chemical and biological detection of pesticide and metal contaminants in aquatic environments; and early biological warning systems for environmental stress. There is a strong focus on the development of environmentally sustainable practices, conservation, biodiversity and management as they relate to an emerging life sciences economy based on innovative uses of bioresources. This research addresses issues of particular concern in Prince Edward Island, but is closely connected to research being conducted in a variety of other national and international venues.

**HUMAN DEVELOPMENT AND HEALTH:** Research foci include determinants of health , health policy, children's health and learning based decision making; promotion of children's and youth's healthy living; high risk behaviours; literacy and social health; conceptualizations of mental health; effects of aging on memory; cognitive stimulation as health factor in aging; and nutrition and quality of life issues in all ages.

**ISLAND STUDIES:** Island Studies involves the deliberate reference to and critical examination of 'islandness' as a feature that informs island life and how it unfolds in a multitude of disciplinary or policy areas. Research foci include the political economy of North Atlantic islands, with an emphasis on the creative use of jurisdictional capacity; the literature of small islands; island ecosystems with an emphasis on environmental issues and sustainability; migration; small islands societies; human health; and innovation and technology. This research has a major impact on public policy for island jurisdictions.

**MOLECULAR AND MATERIALS SCIENCE:** Research emphasizes supramolecular chemistry; biomaterials; mathematical models of molecules, materials and surfaces; and the synthesis and characterization of new molecules and functional materials including biodegradable polymers, catalysts, sensors and electronic and ionic conductors. This work finds application in the areas of health, environment and sustainability

**POPULATION HEALTH:** Population health research is primarily based within the Centre for Veterinary Epidemiology Research (CVER). Although CVER has a focus on animal health related research, it serves as a home for all faculty and external collaborators who are engaged in population based, health research in PEI. Specific areas of activity include, but are not limited to: epidemiologic methods, infectious and non-infectious diseases of cattle, horses, fish, shellfish and birds; animal welfare; wildlife biology; public health including zoonotic diseases; nutritional risk factors and determinants of human health; and population health through the School of Nursing. Research at UPEI contributes to better understanding of the dynamics, disease treatment and health management promotion of populations of people and of domesticated and wild animals in PEI, regionally and internationally.

#### **DEVELOPING CONSTELLATIONS:**

**ENTREPRENEURSHIP AND INNOVATIONS:** Researchers in this constellation focus on understanding the needs of enterprises and entrepreneurs as they compete in an increasingly competitive environment. This includes tourism and travel; management of people and organizations; business skills development; accounting and financing, including micro-finance; governance; and technology development innovation and new ventures. The constellation cuts across the various fields of business while linking with the social and other sciences. Their research emphasizes sustainability, impact on public policy, and best practices within a local and global perspective.

**HUMANITY, CULTURE & IDEAS:** This emerging constellation examines the ways in which cultural production of literature, music, the performing arts and media are influenced by, and in turn, alter human understanding. Scholars look at the ways in which humanity produces particular intellectual

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and cultural environments and at how these environments are refracted to inform and condition humanity's experience of itself and the wider world. Key to this constellation is the on-going analytical consideration of the tensions generated between modernist and post-modern interpretations of cultural production. Visual, audio and literary representation, the production and dissemination of literary text, cultural construction through media, elite and anthropological cultural formulations constitute important aspects of this research.

**LEARNING & LEADERSHIP:** These researchers focus on the scholarship of learning and teaching, including but not limited to innovative methodologies across disciplines, multiliteracies, education for inclusion and social justice, and arts based education. Work in this constellation seeks to understand and improve leadership practices for the benefit of all learners across a broad range of learning and teaching contexts. Research in this constellation is transdisciplinary and applies locally and broadly.

**VII. MEASURING SUCCESS:** In areas supported by the appointment of a CRC and/or funding from the CFI, the University expects to see increasing numbers of undergraduate students who pursue graduate studies; numbers of graduate students attracted to UPEI; numbers and value of grants from councils and foundations; numbers of research contracts; collaborations with private, public, and post-secondary education sector partners; publications by researchers working in the area supported. Our culture of research, creativity, and innovation will support the recruitment and retention of faculty.

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