Building on Strength, Expertise and Excellence

Introduction

Research is a central mandate of universities and one that the University of Prince Edward Island (UPEI) embraces with vigour. As used in this Strategic Plan, research is an inclusive term embracing the full range of intellectual, scholarly and creative endeavours focused on the discovery, integration, interpretation and application of knowledge. The University and our researchers in the Humanities[1] and in the Social[2], Natural[3] and Health[4] Sciences are committed to research, and to the pursuit of excellence across the range of fields that embraces a variety of types of work from that of the solitary scholar through to that of the collaborative team. Our research excellence is grounded in a system of peer review and critical assessment whether these occur at the funding, pre-publication, dissemination, or utilization stage but which take as their norm the understanding that valued research is subject to the critical evaluation of others, expert in the field, and the rigorous national and international standards to which research, scholarly, and creative work is held. In fulfilling its commitment to research excellence, the university community will work to support, facilitate, enhance, recognize and celebrate the meritorious work of all researchers, be they single scholars or multi-researcher teams. This commitment extends to graduate and undergraduate students as well as to faculty.

UPEI is home to a range of different types of research from that which seeks to explore challenging questions to that which seeks to solve specific problems.   The University is committed to the ongoing development of its faculty members[5] as researchers, the development of their research, and to the education and training of new generations of critical thinkers, researchers and scholars across this spectrum. Further, the University understands that people, ideas, collaborations and resources are the underpinnings needed for academic research to thrive. The University will work as a community to strengthen further the foundations of research excellence in inter-related areas of scholarly work which provide domains of expertise, and in the individual scholar's and researcher's engagement in systematic enquiry. The University will pursue opportunities for the growth and enhancement of researchers and resources.

Vision

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[1] **Humanities** are those academic disciplines which study the human condition. Humanities fields include Classics, History, Language and Literature, Music, Performing Arts, Philosophy, Religion, Theatre and Visual Arts.

[2] **Social Sciences** are those academic disciplines which study human society and human relationships in and to that society. Social Science fields include Anthropology, Business, Economics, Education, Geography, Law, Linguistics, Political Science, Psychology, and Sociology.

[3] **Natural Sciences** are the sciences involved in the study of the physical world and its phenomena. These disciplines include Astronomy, Biology, Chemistry, Earth Science and Physics. Natural Sciences are also often considered to also include the **Formal Sciences**, which are those involved with theoretical formal systems including Logic, Mathematics, and the theoretical branches of Computer Science, Engineering, Information Theory and Statistics.

[4] **Health sciences** are those academic disciplines which study the physical body and health-related issues to understand how animals and humans function, and apply that knowledge to improve health, and to prevent and cure diseases. Applied health sciences also endeavor to better understand health and explore mechanisms to improve the health of individuals and of populations in general. Health Science fields include Epidemiology, Nursing, Nutrition, Pharmacology, Public Health, Psychology, and Veterinary Medicine.

[5] Throughout this document, references to faculty member(s) refer to those with a research mandate.

The University of Prince Edward Island is an evolving research institution that has seen significant growth and development over the past decade. As we move into our future, we advance the following vision for our continued development:

Vision for Research

► ***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.***

► ***UPEI will exemplify innovation in research communication, knowledge dissemination, and knowledge utilization.***

Background

Since their beginning in the early thirteenth century, Universities have traditionally enjoyed a level of autonomy unmatched in the rest of society. This positioning within society allows the university to entertain a view on society and on its own part in it from a relatively detached perspective. Further, the university has historically been the major institution through which society has developed a capacity to understand itself over the long term. It is crucial to the well-being and advancement of society that this function be maintained.

Nonetheless, the university's role in society changes with society itself. The view of the role of research in North American universities continues to exhibit a dynamic tension between models of a university proposed by Wilhelm von Humboldt and John Henry Newman[6]. Within the classic Humboldtian model, research focussed on developing objective and scholarly knowledge about the worlds of nature and of human affairs and was linked to the pragmatic needs of society. As well, for Humboldt, there was an essential unity between teaching and research. Newman's ideas, though, developed as a direct response to the growing effect of the industrial revolution on higher education and knowledge. Consequently, Newman's model is less pragmatic in its orientation, seeing research and the development of knowledge as activities to be pursued for their own sake. The tension between these differing views of the nature of research within a

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[6] Not withstanding this dynamic pull, Universities have steadfastly maintained a commitment to von Humboldt's "Lehrfreiheit", that is freedom from state interference in seeking and conveying knowledge, which provides a basis for today's concept of academic freedom.

university continue to underlie today's universities as they strive to create new roles and respond to new requests from society. In the period from 1945 to the 1980s, universities were largely focused on the Newman university model. However, since the 1980s, there has been a return toward a conceptualization of the university as engaging in socially relevant research with real world effects. Between these two poles, the University of Prince Edward Island, as the Province's only university, seeks to situate itself in a way that recognizes the importance of both university models. While engaging in research that pursues innovation, the creation of new technology, and knowledge utilization, it also recognizes and supports the fundamental value of research for its own sake.

The University of Prince Edward Island understands that universities make a contribution to society through the myriad of ways in which the academy is uniquely qualified. These include:

- Fundamental research to discover and understand the nature of our world;
- Creative endeavours which frame our consciousness and underscore our humanity;
- Research on people, animals and the world which generally informs and provides the basis for improvements in our undertakings;
- Knowledge-based partnerships with our communities to enhance them economically, socially, politically, and, educationally; and
- Innovation alone or in partnership with other sectors of society.

Research and scholarship, in all their variations, and researchers' freedom to engage in the research arenas of their choice, remain at the heart of what we do and the principal method used to understand the world around us. As well, and no less important, the active pursuit of research and scholarship creates an open environment and a culture of intellectual endeavour that is fundamental to the well-being of all members of the university, that encourages cross-fertilization of ideas and expertise, that provides a context for creativity, and that informs and enriches teaching.

The fundamental importance of research within the University context, coupled with the University's unique role within society, obliges faculty members to undertake research and scholarship and underscores the need for the university community to support it. Nonetheless, any one faculty member's level of engagement in research may vary with her or his relative dedication to other aspects of academic responsibilities including teaching, contributions to University governance, contributions to the community and/or contributions to professional service.

UPEI faculty members have been, and continue to be productive researchers and scholars. Based on the information contained in our developing institutional repository, since 1990 UPEI scholars have published over 295 books, more than 245 book chapters and edited books, and over 6600 journal articles, and have made 9 recordings in the performing arts.   A productive research career is facilitated by effective support to developing scholars as their academic

careers are established and grown. As such, the university community will work to achieve the following strategic priorities over the next ten years:

Strategic Priorities

- To develop enhanced campus-wide research mentoring programs, built on national and international best-practices and the foundations provided by the work of the Office of Research Development (ORD) and the PEI Health Research Institute (PEI HRI) programs.
- To refine targeted mechanisms for effective identification and communication of research opportunities which match the focus of individual researchers and those of collaborative teams.
- To enhance the Research Orientation and Program Planning sessions provided to new members of faculty.

Research Leadership

As UPEI's culture of research has developed over the past ten years, our researchers and scholars have become more widely recognized as research leaders. This is clear from the increased number of requests to join editorial boards, to adjudicate the work of peers, to organize national and international panels and meetings, and by the campus' ability to attract and retain Canada Research Chairs and other funded Chairs and Professorships. Given UPEI's growth and development over the last ten years, we are now positioned to advance our research leadership further. Thus, the UPEI community sets the following strategic priorities for the next ten years:

Strategic Priorities

- To establish 12 new, funded Research Chairs, Professorships, and/or Fellows, distributed across research clusters and constellations (see below).
- To develop and host an annual Research Leadership Summer Institute focused on the nature of leadership, skill development and opportunity enhancement.
- To lead or co-lead three major regional or national collaborative research initiatives.
- To host at least one major, international conference within each constellation over this period.
- To develop at least one nationally recognized centre of expertise (through UPEI's formally structured research institutes and centres) in each constellation.
- To develop nationally recognized leading edge dissemination tools (e.g., journals, international listservs, or newsletters etc) in each constellation.

Outreach

UPEI has always prided itself on the quality and the relevance of its academic work. We place great value on our pure investigative research but we also value the usefulness of our research to the community at large. The unique position of the university to examine critical questions, to develop practical knowledge and to nurture society's future leaders is a crucial responsibility, all the more so in that it is society that supports the institution and grants it its autonomy.   As such, many researchers and scholars feel an ethical and intellectual responsibility towards the wider world that involves fostering an informed public culture, a culture in which people have the ability to evaluate, critique and create as an indispensable part of any genuinely democratic society. In contributing to such a critical public culture, it is important that research and scholarship be readily available through a variety of media.

Research-informed decision-making in all areas of policy and practice is essential to the health and betterment of society as a whole and, as new technology emerges, the impact of research broadens. As well, our communities, governments, and the voluntary sector rely on us to address specific issues. No other institution is positioned to perform this role. In pursuing this work in collaborative partnership with other institutions, organizations and entities, UPEI underscores its relevance to the society that houses it.

Beyond this formal role, it is also becoming increasingly clear that there is a connection between advances in knowledge and economic growth. This connection is symbiotic, for the use of knowledge for both the public good and in the private sector leads to community sustainability, economic growth, and a thriving cultural community. These societal benefits in turn lead to an increased ability to obtain the support for further advances in knowledge and spur the development of more sophisticated research facilities, stronger graduate training programs, and the pursuit of more research.

As the province's only university, UPEI must spearhead intellectual activity, research and the development of a sophisticated and cultured citizenry that is capable of developing sustainable communities, initiating new economic and social developments that reflect on the political situation, and enrich culture, both at home and abroad.   Accordingly, we propose:

Strategic Priorities
- To enhance the coordination, publicizing and recognition of existing public outreach activities (i.e. Lecture Series, Research Breakfast, distinguished addresses, etc.) in order to maximize the development and support of an informed public culture.

- To adopt a "philosopher's bench" model of interactive research talks in public venues such as food courts, pubs, and other public spaces.
- To enhance researchers' and scholars' outreach into PEI's public schools.
- To develop a publicly accessible institutional repository which will contain citations for all research conducted at UPEI, as well as, in accord with copyright protocols, access to copies of our research documents, publications, and reports.
- To develop nationally recognized best practices for knowledge translation and its use through collaborations with public and non-profit sector organizations.
- To develop a sufficient pool of funding to support travel to one nationally or internationally recognized academic conference or meeting per year for all faculty members presenting research findings
- To develop nationally recognized best practices for building collaborations with private and public sector entities which result in effective knowledge use and technology transfer.
- To participate in and adopt the best practices of SSHRC's current work[7] on capturing the outcome and impact of all research approaches.

Connections to Teaching

Research is central to the discovery missions of a university and to our ability to prepare our students for the world of citizenship and innovation outside the academy. It is also the research and discovery process that provides the university its context of creativity. Student participation in research embeds the student in the heart of the creative campus – a place where people, ideas, concepts and discoveries mix, and where knowledge and understanding emerge. University research also provides an enhanced learning environment for each new generation of scholars, researchers and citizens who are our students. As well, faculty members engaged in research bring an added element of excitement to their teaching and provide their students with the most current and innovative thinking within their field. The freshness of their ideas and discoveries creates a passion for knowledge that is hard to resist. There is little doubt that proximity to active research and scholarship fosters greater interest in the subject at hand.

The University of Prince Edward Island strives to bring teaching and research together in a mutually supportive manner. We seek to enhance teaching and learning, both inside and outside the university, by providing and promoting

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[7]   http://www.sshrc.ca/web/apply/program_descriptions/presidential_fund_outcomes_e.asp

an environment rich in research and creativity and by continuing to seek diverse and innovative strategies that integrate teaching with research and that frequently cross disciplinary boundaries.

Although the undergraduate research experience is often narrowly viewed as an isolated component of a student's education or as suitable only for some of the most advanced students, as Hodge and others have argued, both the university and the wider society in which it operates are better served when a "student as scholar" model is adopted[8]. Within this framework, not only each research project, but each course is viewed as an integrated and integrating part of the student experience that contributes to the development of a learner who:

- Accepts responsibility for learning (active vs. passive) and uses answers as an opportunity to ask more questions,

- Integrates learning both within and across disciplines,

- Lays out appropriate methodologies for the generation of scholarship or for using original material,

- Understands how to work collaboratively, even within a geographically dispersed team,

- Is internally motivated, not needing external pressures (like grades) to initiate work, and

- Believes she or he is capable of developing new knowledge (Hodge et al, 2007, pg 3-4).

The provision of opportunities for the pursuit of advanced research-focused education is also vital to maintaining and enhancing the university's dynamic research culture. In the recent past, UPEI has begun expanding its suite of graduate programs, as appropriate to our size and the needs of our students and the broader community. Such programs, the efforts faculty commit to them, and the knowledge they produce are mutually beneficial, to both advance the research agenda and develop the highly qualified discoverers, innovators, scholars, thinkers and problem-solvers required by society in the next generation. And so our strategic priorities are:

Strategic Priorities

- To strengthen the research and discovery culture of UPEI further by developing and implementing the "student as scholar" model across the curriculum within the parameters of research and teaching described in this document.

Undergraduate

- To have undergraduate research trainees included in 75% of all research programs by 2018.

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[8]   Hodge, D., Pasquesi, K., Hirsh, M., & LePore, P. (April, 2007) From Convocation to Capstone: Developing the Student as Scholar. Presented at the Network for Academic Renewal Conference, Long Beach, CA.

- Each year, to have at least 10% of the undergraduate student population participating as research trainees in faculty members' research programs (Note: For 2007-08, that number would be approximately 400 students).

- To have developed and implemented a campus-wide undergraduate student research and leadership development program by 2013.

Graduate

- To establish a School of Graduate Studies to provide an effective framework for working with departments, faculties and schools in graduate studies administration by 2010.

- To evaluate and strengthen existing graduate programs.

- To have graduate stipends at national norms.

- To develop and implement four new PhD and four new Masters Programs grounded in research excellence by 2018.

- To double current graduate enrolment by 2018. This would mean increasing enrolment from our current figure of 225 to 450.

- To enhance opportunities for students to develop professional skills through work as teaching and research assistants

- To have developed and implemented a campus-wide graduate student research and leadership development program by 2013.

Research Resources, Tools & Facilities

The research life cycle is complex and multi-layered and requires an increasingly robust infrastructure to support it. From initial conceptualization through to the dissemination, publication and archiving of results, all stages in the process of knowledge creation are of critical importance to the success of any research program. UPEI is committed to taking advantage of the latest developments in technology and information management to ensure that these efforts receive support. One example is the Library's efforts to develop cost-effective approaches to the acquisition of information resources that support research on campus, and to enhance the delivery of these resources with special services, such as the desktop delivery of Inter-Library Loan material, the provision of online help services, and the development of a flexible research discovery system.

Another important resource under development is the Virtual Research Environment (VRE) and the associated Research Repository. These are designed to gather, manage and distribute digital output at all stages of the research process. The essential foundation of this sophisticated research tool is a web framework that offers seamless access to resource discovery, data analysis, discussion forums and chat functions, bibliographic sharing, and collaborative

workspaces. Less visible, but equally important is the VRE's underlying information management strata that seamlessly integrate standards-based data preservation, storage, and access functions. This infrastructure translates the University's commitment to open access into a reality.

These investigative technological tools are augmented by enhancements in equipment and facilities. UPEI, in conjunction with funding partners and with the leadership of researchers who champion the initiative, has actively pursued infrastructure expansion. For example, from 1999 to 2007 UPEI researchers were awarded 21 Canada Foundation for Innovation grants, which, together with partner funding, have provided over $52 million toward new equipment and facilities. Similarly, between 2003 and 2007, UPEI, in conjunction with partners, has invested over $65 million in research buildings. Nonetheless, as the intensity of research and scholarly activity continues to increase and as undergraduate and graduate student research engagement broadens, we will need to expand our facilities and increase the number of research tools available to scholars. The University's capital campaign and the continued pursuit of infrastructure awards by our researchers confirm our commitment to providing and maintaining state-of-the-art research tools and facilities.

Strategic Priorities

Facilities

- To establish and maintain discipline-appropriate research facilities in the Humanities and in the Natural, Social, and Health Sciences.
- To develop public performance and exhibition space in conjunction with UPEI researcher champions and other partners.
- To design our facilities in order to encourage, enhance, and support synergistic interactions between researchers from all disciplines.
- To meet the space requirements of graduate and undergraduate student researchers innovatively in order to promote interdisciplinary exchanges, collegiality and success.

Operating Resources

- To have funding support in place for the research and scholarship of all faculty members whose research would benefit from access to operating funds.
- In conjunction with researchers and scholars in the Humanities and Social Sciences, to identify and pursue new funding sources for traditionally under-funded research areas.
- To increase internal funding support by 10% of current levels per year, so that this support is doubled by 2018.

- To double the proportion of research funding from non-traditional sources (e.g. non-governmental, corporate sources, foundations, etc.) from a current average of 17.5% to an average of 35% of total funding by 2018.

Information Resources

- Through continued commitment to the Canadian National Site Licensing Project and the Canadian Research Knowledge Network initiatives, and the development of further partnerships and alliances, to ensure that researchers have timely access to the key research information resources in all disciplines either through immediate access via campus licenses or special library services. In practice, this would mean within three days.

- To continue the development of the Library's ability to provide all campus scholars and researchers with the support needed to create, acquire, maintain, distribute and archive research outputs, including data, in permanent, searchable formats.

- Through the Virtual Research Environment (VRE) to provide a world-leading, flexible information technology infrastructure in support of the conceptualization, dissemination, publication and long-term stewardship of research.

- To provide all interested campus-based research collaborations with a VRE and with the support needed to ensure research data and results are preserved.

- To ensure that the University's computer and information technology systems are advanced and will support and maintain the digital information produced by the research efforts across campus.

- To provide appropriate resources, training and support to researchers for the distribution of research output via open access methods.

Time

- To build on current initiatives which enhance time for research (e.g. release time for new faculty members, teaching reduction to 3 & 2, SSHRC support for release time, etc.) by developing enhanced mechanisms for providing concentrated blocks of research time through innovative scheduling of teaching and other responsibilities.

Celebration

UPEI is home to accomplished researchers and scholars whose achievements often remain unacknowledged by their colleagues and the university community as a whole. Therefore, to advance our recognition and celebration of success, the university community will undertake:

Strategic Priorities

- To develop a collegial mechanism for gathering and conveying information on research accomplishments and success in order that these may be celebrated by the University and its communities.

- To develop Faculty Research Days and a series of Graduate Student Seminars, that is, monthly interdisciplinary research forums followed by informal socials, loosely structured around the constellations, clusters and individual research initiatives.

- To develop and hold constellation-based public speaker series.

- To have UPEI research featured in national and international professional, lay and electronic outreach venues at least 12 times per year.

- To establish annual, publicly celebrated research awards for faculty members, undergraduate students and graduate students in each faculty and school.

- To establish awards that recognize innovation in research communication, knowledge dissemination or knowledge use across a diversity of research approaches.
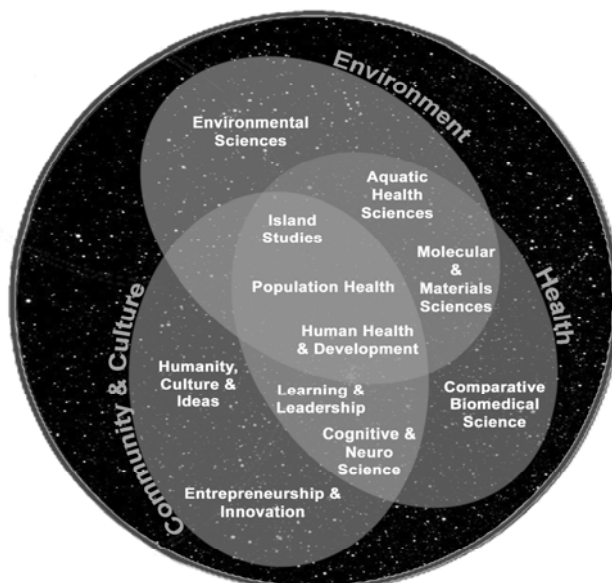
Interdisciplinarity

Now, more than ever before, research in many areas is a collaborative activity that transcends geographic barriers, crosses disciplinary boundaries, and scales the walls that previously separated the academy from communities, governments and the private sector. Establishing links between and among the social, natural and health sciences, and the humanities increases the richness of multi-disciplinary research and expands the total knowledge landscape.

The divisions between disciplines and between discovery and applied research are becoming less pronounced. Nonetheless, we recognize that the disciplinary expertise that researchers and scholars bring to collaborative work is fundamental to its success, and that therefore today's researchers and scholars need both disciplinary depth and an ability to embrace the knowledge generation techniques and results of a wide variety of others.   The University is committed to fostering, supporting and enhancing interdisciplinary approaches in research, scholarship, discovery and innovation balanced with a commitment to discipline specific approaches. As such, UPEI recognizes that broadly encompassing conjunctions of research focus will emerge from the work carried out by individual scholars and has labelled these as Clusters and Constellations.

Clusters and Constellations

UPEI encourages, supports and celebrates research, both individual and collaborative, across the full spectrum of academic disciplines. However, when the areas of research pursued at UPEI are examined, they can be seen to cluster within three themes: Health, Environment, and Community and Culture. Within each cluster, and at their intersections, we find the excellence of the solitary researcher working independently as well as that of the collaborative research team working to bring their respective disciplinary expertise to the particular question under consideration. Together these themes provide an integrating perspective on some of our emerging and existing areas of excellence.

Individual & Collaborative Research Excellence at UPEI

UPEI has defined transdisciplinary aggregations of research focus as constellations. The constellations which fall within our themes and their intersections provide a finer-grained view of areas of research focus. These boundary-crossing, constellation-based approaches form a fundamental component of our ability to address the challenges of the present and the future. Such constellations of researchers pursuing conceptually related research are a well-established approach in the natural, health and social sciences, but are, at present, only emerging in the humanities. As well, across an individual career, a researcher's work may include either or both individual and team research approaches. Nonetheless, the complexity of issues and questions being addressed often demand insight and understanding from a breadth of perspectives, and we foresee even greater incorporation of the humanities into our constellations.

Perspectives which are anchored in the in-depth, disciplinary-based approaches that are fundamental to the pursuit of understanding and knowledge can contribute new insights and lead to new understanding when applied in an

interdisciplinary context. UPEI continues to encourage the pursuit of collaborative work, welcomes independent research, and seeks to foster on-going dialogue among all its researchers and scholars.

UPEI first identified its constellations of research excellence in response to the requirements of the Canada Foundation for Innovation (CFI) and the Canada Research Chairs (CRC) programs. In UPEI's original strategic research plan developed in 1999-2000, seven constellations were identified. Based on broad-based consultations and the feedback received on earlier drafts of this revised strategic research plan, we are now proposing that four new constellations be added as areas of additional research strength.

Constellations of research strength are characterized as:

- Representing existing or developing research strengths,

- Encompassing the work of researchers from more than one discipline or unit,

- Having a proven ability or strong potential to result in peer-reviewed research and scholarly work,

- Offering a demonstrable impact – in terms of benefits and reputation – for Prince Edward Island, the Atlantic Region and Canada, and

- Promising an element of "team building" that will benefit UPEI as a whole.

UPEI's constellations are as follows.

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.

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.

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 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.

Humanity, Cultures & 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 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.

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. At present, researchers involved in this constellation hold four research awards, have firmly established local, national and international linkages, an international scholarly journal, and the constellation hosts a Canada Research Chair. 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.

Learning and 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.

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 biodegradeable polymers, catalysts, sensors and electronic and ionicconductors. 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.

As research develops over the next ten years, it is anticipated that our constellations will continue to be dynamic entities that develop, evolve, mature, and transform.   New constellations are expected to emerge and will be embraced. Constellations will reorganize or may perhaps disappear. As a result of such dynamic evolution, UPEI research will continue to evolve and to gain strength, recognition and impact. As part of these processes, UPEI will work:

Strategic Priorities

- To identify constellation affiliations and leaders.
- To hold regular constellation- and theme-based forums for "workshopping" and providing constructive, interdisciplinary debate of works in progress that will engage researchers from across campus.
- To develop mechanisms for acknowledging and fostering the commitment and skills required to lead successful interdisciplinary research teams.
- To develop mechanisms to foster the growth and maturation of emerging constellations of research expertise.

Outcomes Anticipated by 2018

As the university community works together to refine, develop and enact the strategic priorities outlined in this Plan, we anticipate the following outcomes and effects will come to characterize research at UPEI by 2018.

- Strong, vibrant research programs which are supported at funding levels at or above national norms and that result in nationally recognized publications, presentations and performances at levels at or above disciplinary norms will have been developed and maintained.

- Levels of internal and/or external research funding support appropriate to the norms of the discipline and field will have been sought or secured by the third year of an academic appointment at UPEI.

- More UPEI researchers will emerge as national leaders throughout the next decade.

- The generation, and the dissemination, transfer and/or utilization of new knowledge through peer reviewed research, exhibitions and performances will be ubiquitous.

- Appropriate levels of funding support will be secured throughout academic careers.

- UPEI will have systems to track and celebrate research achievement.

- Results and data generated through UPEI based research will be publicly accessible through an open access repository that will be 80% complete by 2009 and fully complete by 2012

- There will be enhanced provincial, regional and perhaps national economic and social development through effective transfer of UPEI knowledge and technology.

- UPEI will be nationally known for the excellence of its public recognition and celebration of the research achievements of its faculty members and students.

- Research funding will have increased from 2007-08 levels by 300%. This rate of growth is significantly below the over 600% increase achieved between 1998 and 2008, but nonetheless anticipates aggressive growth based in existing and growing excellence in people, ideas, collaborations and resources, while acknowledging that government investments in university research may be decreasing.

- Graduate enrolments will have doubled.

- The number of baccalaureate graduates who go on to pursue careers in research will have doubled.

Implementation

Over the course of the next ten years, the University aspires to create, expand and maintain a vigorous and robust research culture in which all scholars are actively engaged in the production and dissemination of knowledge and are supported by the scholarly infrastructure and internal and external resources they require to fulfil their research goals. In order to realise this vision and to foster and enhance the development of this increasingly vibrant scholarly culture from both an individual and a university-wide perspective, we advance the following implementation overview. Detailed implementation plans will be developed through UPEI's regular, as well as *ad hoc*, governance and consultation mechanisms. Overall oversight of the process and outcomes, and reporting to Senate, will be the responsibility of the Research Advisory Committee of Senate.

IMPLEMENTATION	RAC	VP, R&D/ORD	Researchers	Deans	Chai rs	Advancement	Integrated Promotions	Library	Other
Strategic Priorities - *Researcher Development*									
1. To develop enhanced campus-wide research mentoring programs, built on national and international best-practices and the foundations provided by the work of the Office of Research Development (ORD) and the PEI Health Research Institute (PEI HRI) programs.		✓✓	✓						✓ PEI HRI
2. To refine targeted mechanisms for effective identification and communication of research opportunities which match the focus of individual researchers and those of collaborative teams.		✓✓	✓			✓			
3. To enhance the Research Orientation and Program Planning sessions provided to new members of faculty.		✓✓	✓						
Strategic Priorities – *Research Leadership*									
4. To establish 12 new, funded Research Chairs, Professorships, and/or Fellows, distributed across research clusters and constellations.		✓	✓	✓		✓			✓ President
5. To develop and host an annual Research Leadership Summer Institute focussed on the nature of leadership, skill development and opportunity enhancement.	✓✓	✓	✓			✓			
6. To lead or co-lead three major regional or national collaborative research initiatives.		✓	✓✓						
7. To host at least one major, international conference within each constellation over this period.		✓	✓✓						

✓✓ - indicates primary responsibility for implementation

✓ - involved in implementation

IMPLEMENTATION	RAC	VP, R&D/ORD	Researchers	Deans	Chairs	Advancement	Integrated Promotions	Library	Other
8. To develop at least one nationally recognized centre of expertise (through UPEI's formally structured research institutes and centres) in each constellation.		✓	✓✓						
9. To develop nationally recognized; leading edge dissemination tools (e.g. journals, international listserves, or newsletters etc) in each constellation.		✓	✓✓					✓	
Strategic Priorities - *Outreach*									
10. To enhance the coordination, publicizing and recognition of existing public outreach activities (i.e. Lecture Series, Research Breakfast, distinguished addresses, etc.) in order to maximize the development and support of an informed public culture.		✓✓		✓	✓		✓		
11. To adopt a "philosopher's bench" model of interactive research talks in public venues such as food courts, pubs, and other public spaces.	✓✓	✓	✓				✓		
12. To enhance researchers' and scholars' outreach into PEI's public schools.			✓	✓✓	✓				
13. To develop a publicly accessible institutional repository which will contain citations for all research conducted at UPEI, as well as, in accord with copyright protocols, access to copies of our research documents, publications, and reports.		✓	✓					✓✓	
14. To develop nationally recognized best practices for knowledge translation and its use through collaborations with public and non-profit sector organizations.		✓	✓✓						

✓✓ - indicates primary responsibility for implementation

✓ - involved in implementation

IMPLEMENTATION	RAC	VP, R&D/ORD	Researchers	Deans	Chai rs	Advancement	Integrated Promotions	Library	Other
15. To develop a sufficient pool of funding to support travel to one nationally or internationally recognized academic conference or meeting per year for all faculty members presenting research findings.		✓✓		✓	✓	✓			
16. To develop nationally recognized best practices for building collaborations with private and public sector entities which result in effective knowledge use and technology transfer.		✓✓	✓✓						
17. To participate in and adopt the best practices of SSHRC's current work on capturing the outcome and impact of all research approaches.		✓✓	✓					✓	
Strategic Priorities – Connections to Teaching									
18. To strengthen the research and discovery culture of UPEI further by developing and implementing the "student as scholar" model across the curriculum within the parameters of research and teaching described in this document.	✓		✓	✓	✓				✓ APFC ✓ ARPC
Undergraduate									
19. To have undergraduate research trainees included in 75% of all research programs by 2018.		✓	✓✓	✓	✓				
20. Each year, to have at least 10% of the undergraduate student population participating as research trainees in faculty members' research programs (Note: For 2007-08, that number would be approximately 400 students).		✓	✓✓	✓	✓				

✓✓ - indicates primary responsibility for implementation

✓ - involved in implementation

IMPLEMENTATION	RAC	VP, R&D/ORD	Researchers	Deans	Chairs	Advancement	Integrated Promotions	Library	Other
21. To have developed and implemented a campus-wide undergraduate student research and leadership development program by 2013.	✓✓	✓	✓						
Graduate									
22. To establish a School of Graduate Studies to provide an effective framework for working with departments, faculties and schools in graduate studies administration by 2010.		✓		✓					✓✓ Graduate Studies Working Group (GSWG)
23. To evaluate and strengthen existing graduate programs.			✓	✓	✓				✓✓ GSWG ✓ ARPC
24. To have graduate stipends at national norms.		✓	✓	✓	✓	✓			✓✓ GSWG
25. To develop and implement four new PhD and four new Masters Programs grounded in research excellence by 2018.			✓	✓	✓				✓✓ GSWG ✓ ARPC
26. To double current graduate enrolment by 2018. This would mean increasing enrolment from our current figure of 225 to 450.			✓	✓	✓				✓✓ GSWG, ARPC
27. To enhance opportunities for students to develop professional skills through work as teaching and research assistants.				✓✓	✓				✓ GSWG
28. To have developed and implemented a campus-wide graduate student research and leadership development program by 2013.	✓	✓	✓						✓✓ GSWG

✓✓ - indicates primary responsibility for implementation

✓ - involved in implementation

IMPLEMENTATION	RAC	VP, R&D/ORD	Researchers	Deans	Chairs	Advancement	Integrated Promotions	Library	Other
Strategic Priorities - *Research Resources, Tools & Facilities*									
Facilities									
29. To establish and maintain discipline-appropriate research facilities in the Humanities and in the Natural, Social, and Health Sciences.		✓	✓✓			✓			✓✓ VP F&F
30. To develop public performance and exhibition space in conjunction with UPEI researcher champions and other partners.		✓	✓✓			✓			✓✓ VP F&F
31. To design our facilities in order to encourage, enhance, and support synergistic interactions between researchers from all disciplines.		✓	✓						✓ VP F&F ✓ GSWG
32. To meet the space requirements of graduate and undergraduate student researchers innovatively in order to promote interdisciplinary exchanges, collegiality and success.				✓	✓				✓ VP F&F ✓ GSWG
Operating Resources									
33. To have funding support in place for the research and scholarship of all faculty members whose research would benefit from access to operating funds.		✓✓	✓	✓	✓	✓			
34. In conjunction with researchers and scholars in the Humanities and Social Sciences, to identify and pursue new funding sources for traditionally under-funded research areas.		✓	✓✓			✓			
35. To increase internal funding support by 10% of current levels per year so that this support is doubled by 2018.		✓✓	✓	✓	✓	✓			

✓✓ - indicates primary responsibility for implementation

✓ - involved in implementation

IMPLEMENTATION	RAC	VP, R&D/ORD	Researchers	Deans	Chai rs	Advancement	Integrated Promotions	Library	Other
36. To double the proportion of research funding from non-traditional sources (e.g. non-governmental, corporate sources, foundations, etc.) from a current average of 17.5% to an average of 35% of total funding by 2018 **.**		✓	✓✓						
Information Resources									
37. Through continued commitment to the Canadian National Site Licensing Project and the Canadian Research Knowledge Network initiatives, and the development of further partnerships and alliances, to ensure that researchers have timely access to the key research information resources in all disciplines either through immediate access via campus licenses or special library services. In practice, this would mean within three days.		✓						✓✓	
38. To continue the development of the Library's ability to provide all campus scholars and researchers with the support needed to create, acquire, maintain, distribute and archive research outputs, including data, in permanent, searchable formats.			✓					✓✓	
39. Through the Virtual Research Environment (VRE) to provide a world-leading, flexible information technology infrastructure in support of the conceptualization, dissemination, publication and long-term stewardship of research.			✓					✓✓	
40. To provide all interested campus-based research collaborations with a VRE and with the support needed to ensure research data and results are preserved.			✓					✓✓	

✓✓ - indicates primary responsibility for implementation

✓ - involved in implementation

IMPLEMENTATION	RAC	VP, R&D/ORD	Researchers	Deans	Chairs	Advancement	Integrated Promotions	Library	Other
41. To ensure that the University's computer and information technology systems are advanced and will support and maintain the digital information produced by the research efforts across campus.			✓						✓✓ Computer Services
42. To provide appropriate resources, training and support to researchers for the distribution of research output via open access methods.		✓	✓					✓✓	
Time									
43. To build on current initiatives which enhance time for research (e.g. release time for new faculty members, teaching reduction to 3 & 2, SSHRC support for release time, etc.) by developing enhanced mechanisms for providing concentrated blocks of research time through innovative scheduling of teaching and other responsibilities.			✓	✓✓	✓✓				✓ Registrars Office
Strategic Priorities - Celebration									
44. To develop a collegial mechanism for gathering and conveying information on research accomplishments and success in order that these may be celebrated by the University and its communities.	✓✓	✓	✓						
45. To develop Faculty Research Days and a series of Graduate Student Seminars, that is, monthly interdisciplinary research forums followed by informal socials, loosely structured around the constellations, clusters and individual research initiatives.	✓✓	✓	✓						

✓✓ - indicates primary responsibility for implementation

✓ - involved in implementation

IMPLEMENTATION	RAC	VP, R&D/ORD	Researchers	Deans	Chairs	Advancement	Integrated Promotions	Library	Other
46. To develop and hold constellation-based public speaker series.	✓✓	✓	✓				✓		
47. To have UPEI research featured in national and international professional, lay and electronic outreach venues at least 12 times per year.		✓✓	✓				✓		
48. To establish annual, publicly celebrated research awards for faculty members, undergraduate students and graduate students in each faculty and school.	✓			✓✓		✓			
49. To establish awards that recognize innovation in research communication, knowledge dissemination or knowledge use across a diversity of research approaches.	✓✓	✓				✓	✓		
Strategic Priorities – Interdisciplinarity/Constellations & Clusters									
50. To identify constellation affiliations and leaders,	✓✓		✓						
51. To hold regular constellation- and theme-based forums for "workshopping" and providing constructive, interdisciplinary debate of works in progress that will engage researchers from across campus.	✓✓	✓	✓						
52. To develop mechanisms for acknowledging and fostering the commitment and skills required to lead successful interdisciplinary research teams.		✓✓					✓		
53. To develop mechanisms to foster the growth and maturation of emerging constellations of research expertise.	✓	✓✓	✓						

✓✓ - indicates primary responsibility for implementation

✓ - involved in implementation