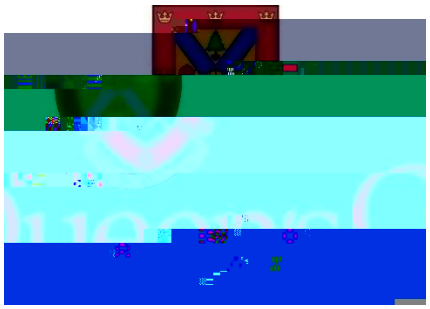

Strategic Research Plan 2012-2017

May 2012

Executive Summary

Queen's University stands unique amongst its peers. For over 170 years, Queen's has been a leader in higher education, as well as in shaping Canada's future. Queen's ranks amongst the top ten research-intensive universities in Canada, and does so as a mid-sized residential university, with a strong sense of community and purpose. At the core of its success is Queen's commitment to research excellence, and an inextricable link that binds teaching and research, with the common fundamental thread of learning.

The Queen's Strategic Research Plan (SRP) is a component of broader integrated planning and represents a subset of the overarching Academic Plan. The guiding principles that shape the priorities, investments and support for research undertaken at Queen's University reflect our academic mission as a research-intensive university with a transformative student experience.

Queen's will continue to distinguish itself as one of the most research-intensive institutions within Canada, with a continued focus on excellence, research leadership and impact at a national and international level. Queen's international reputation will be enhanced through increasing global engagement by developing and expanding international research collaborations, building sustained multinational partnerships, and understanding and addressing global challenges through international development projects.

Queen's greatest strength is the people who contribute to research and scholarly activities. Our

Finally, Part 1 outlines the support mechanisms, structures and resources needed to facilitate Queen's continued success as a research-intensive university and to advance its reputation internationally, providing twenty-one key recommendations to move us through the next five years.

The key recommendations include the following:

Measuring our Progress and Success

1. Increase the University's ability to assess weaknesses, opportunities and strengths for establishing planning and priorities.
2. Identify key performance indicators and an appropriate set of metrics to inform decision-making and investments.
3. Develop a performance monitoring template, where research performance and successes in meeting targets will be closely tracked and develop a best-in-class tracking system.

Processes/Mechanisms to Advance Research

4. Invest in, and implement, an electronic research project management system (TRAQ).
5. Ensure timely communication and effective internal processes to convey information to the research community on changes to programs, policies and guidelines.
6. Strengthen internal and external research communications, including development of a new VPR website, producing strategic publications and promoting research excellence, accomplishments and impacts.
7. Explore options for providing expert, responsive and responsible services for support of major projects and new programs.
8.

that is driven by the community of scholars and researchers drawn to the Institute responding to the most important questions and challenges.

Global Engagement and Internationalization

14. Develop greater institutional coordination for global engagement and internationalization.
15. Increase global engagement by developing and expanding international research collaborations, partnerships and international development work.

Research Leadership and Excellence

16. Develop and promote research leadership through achievements in excellence, CRCs, endowed and named chairs, and sponsored research chairs.
17. Review all internal research award programs and identify new ways to support programs.
18. Reinstate the Queen's National Scholar program.
19. Phase out the Queen's Research Chairs program and introduce a Research Leaders award.
20. Establish Chancellors/University Professorships in recognition of a sustained career of accomplishment in scholarly and research activities and in leadership in advancing the University's research reputation.
21. Increase the number of Research Excellence Prizes to up to five awarded each year, one in each of the five fields of health sciences, natural sciences, engineering, social sciences and humanities.

Part 2 of the Plan, the *Thematic Focus*, outlines four major research themes. Each theme contains a number of clusters reflecting emerging and core strengths demonstrated by measures such as strength of research leadership and international reputation, critical mass as evidenced through established Research Centres and Institutes, and significant investment by the University and granting agencies. The themes and their sub-clusters are as follows:

1. Exploring Human Dimensions
    - Cluster: Society, Culture and Human Behaviour
    - Cluster: Human Health and Wellness
2. Understanding and Sustaining the Environment and Energy Systems
    - Cluster: Human Aspects of Healthy Environments
    - Cluster: Ecology and the Natural Environment
    - Cluster: Energy Systems
    - Cluster: Energy and Environmental Policy
3. Creating, Discovering and Innovating
    - Cluster: Creative Production and Expression
    - Cluster: Natural and Physical Sciences

- Cluster: Materials
- Cluster: Advanced Technologies

4. Securing Safe and Successful Communities
    - Cluster: Democracy, Economy and Public Policy
    - Cluster: Information and Communications
    - Cluster: Infrastructure

This section of the Plan serves a number of purposes, including requirements in support of the Canada Research Chair and Canada Foundation for Innovation programs. It encapsulates our research mission, framework of planning, and our focus on research excellence. Queen's recognizes the underlying value of ongoing support of individual scholarship and also recognizes the potential of individual and team researchers from across disciplines working together to address the complex and diverse problems faced by society today.

Our focus is shaped by research clusters reflecting emerging and core strengths as demonstrated by research leadership and international reputation. We will seek to build on investments, including infrastructure, and to further develop emerging areas of strength across the spectrum of disciplines. Innovation will reflect the success of our academic programs, quality of our research and international reputation fuelled by discovery, new ideas and insights, creative works and methods, commercialization outcomes, and knowledge translation, where the outcomes of our research can benefit society broadly, whether directly or indirectly.

The Queen's Strategic Research Plan reflects the University's response and commitment to finding our balance in a shifting landscape. This document establishes a vision for the future that will guide Queen's through the next five years.

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Part 1:

Guiding and Supporting the Research Enterprise

Part 1: *Guiding and Supporting the Research Enterprise*

1.0 Reflections

Queen's University has a long and enviable record of achievement in scholarly work, a record founded on a focus on excellence, unbridled curiosity and creativity. Historically, Queen's has been home to some of the most distinguished scholars and contributors to Canadian society, including Dr. William Mackintosh, Professor and Head of the Economics Department and first recipient of the Royal Society Innis-Gérin medal, Dr. Arthur Lower, Professor of History and one of Canada's most eminent historians, and Dr. John Meisel whose contributions to Royal Commissions and Advisory Boards have earned him numerous teaching, research and service awards, including the Companion of the Order of Canada. This tradition continues with scholars who continue to garner national and international awards for scholarship of the highest quality.

The university's present position as the 6th most research-intensive university in Canada and the trajectory that propelled it to this point resulted from decisions taken beginning in the late 1960s. By 1991, Queen's stature as a research university resulted in it being an inaugural member of the G10, an alliance of Canada's top ten research universities, the goal of which was to increase Government support for research funding and related support. The first Steacie Prize was awarded to a Queen's researcher in 1989, and the first Killam Prize was granted the same year. Queen's has ranked first in the number of research awards and prizes per full-time faculty since 2003[1].

Queen's first tentative steps toward support of innovation and commercialization research began in the 1930s, with a $4,000 investment in the medical research of Dr. Hendry Connell, an eye, ear, nose and throat doctor, whose enzyme solution ("Ensol") for treating cataracts showed early (although subsequently unfulfilled) promise as a cancer treatment.

Now in its 26th year, PARTEQ[2], Queen's arm's-length technology transfer office, manages its own Angel Network and locally funded venture fund, has returned more than $30 million to the university and its inventors and has facilitated the creation of 44 worldwide spinoff companies that have attracted more than $1 billion in investment.

Innovation in its broader context is exemplified across Queen's in superior academic programs, research excellence, and international reputation. Innovation is also reflected in research that brings broad benefits to society as reflected in signature knowledge translation projects including, for example, the Promoting Relationships and Eliminating Violence Network

[1] 2011 *Maclean's* University Rankings
[2] For more information on PARTEQ, see http://www.parteqinnovations.com/

mandate to significantly reimagine the SRP. The challenge in developing an updated SRP is to better define our priorities as a University, and also to find ways to better demonstrate the impact of our research on significant pressing and emerging national global issues.

Imagining the Future, Towards an Academic Plan for Queen's University lays out the challenges of striking the balance between supporting faculty-driven (bottom-up) research and teaching and the need to evolve a more strategic (top-down) approach to planning in order to take advantage of funding opportunities that are increasingly complex in structure and which have become more focused on specific (if not consistent) priorities. Taking advantage of these opportunities requires Queen's to set our own priorities, which will better define where limited resources should be allocated. Such decision-making processes will benefit from greater transparency and inclusion of the Queen's community (students, faculty, staff, alumni, and partners) through clear communication, consultation, and participation in these processes.

In *Imagining the Future*, the University defines a set of values that are relevant to the research enterprise, including quality (i.e., excellence in research), leadership, interdisciplinarity and internationalization. A series of goals are also laid out, two of which are specifically focused on research intensity. The first emphasizes fostering and sustaining a research environment that attracts the best researchers and provides an enhanced learning environment for our students.

The research mission is a defining characteristic of the University's distinctiveness, and an emphasis in the future on research intensity is proposed in all aspects of its operations, including recruitment. The second goal is focused on greater recognition of trainees, graduate students and post-doctoral fellows, their contribution to research and to advancing Queen's University. Career

promote and support interdisciplinarity, and find ways for researchers, including visiting scholars, to engage in greater reflective scholarship with each other.

Committee and subsequently, Queen's Senate. This process also included drafting a Terms of Reference for a Research Community Committee to provide input into the plan throughout its development and included the composition of the proposed Committee. Consultation with the Faculties and broad community consultative processes were outlined, as were timelines and approvals. For the complete revision process please see Appendix 2.

Renewal of the Queen's SRP has been undertaken in parallel with the planning process for development of a new Academic Plan and regular consultation throughout the process has ensured that the SRP is integrally connected. The SRP is a result of broad internal and external consultation with Departments, Schools and Faculties, as well as industry and government. The Plan has been established to support and cultivate the research and academic environment and to provide a roadmap for maintaining and advancing Queen's position as a top ten research-intensive institution[10]. Growing and supporting excellence in research is at the core of the University's SRP.

Our SRP is a framework for those who have the collective vision to embrace its principles and capitalize upon the supports and structures in place to create a vibrant environment of inquiry,

3.1.2 Supporting the Academic Mission

It is essential that research be integrated into the academic mission of Queen's. Working with the Provost and the Vice-Provost and Dean, Graduate Studies, the VPR portfolio will work to support and enhance research activities and experiential learning commensurate with high quality training opportunities for graduate students and post-doctoral researchers. The VPR portfolio will promote opportunities for increased participation of undergraduates in research, including expanding opportunities and supporting initiatives that celebrate undergraduate research.

3.1.3 Innovation

Innovation is embraced in its broadest meaning where the success of our academic programs, quality of our research and international reputation are fuelled by new ideas and methods. Knowledge translation, where the outcomes of our research can benefit society broadly, whether directly or indirectly, will increasingly be an important aspect of the culture of innovation at Queen's.

We remain firmly committed to advancing innovation through support of commercialization of research at Queen's and in the region. Queen's aims to forge closer links with the City of Kingston and other centres throughout southeastern Ontario in support of regional economic development. This will include expanding and strengthening collaborative research partnerships with businesses and industries based in the region and globally[11]. Such relationships are particularly important and provide strategic benefits to the University, including joint funding opportunities, which provide leverage for federal and provincial government investments.[12] These also help us fulfill our role as a broader agent for change and innovation in our region. Increased opportunities for industry-based internships and work experience for graduate students and post-doctoral researchers will be promoted.

Opportunities to grow new businesses and industries will be based on retaining commercialization outcomes, supporting an innovation/entrepreneurial ecosystem in the region, promoting employment opportunities for graduates (undergraduates and graduates) within the region, and fostering innovation through initiatives such as Innovation Park, as well as working with not-for-profit and government organizations in support of social innovation.

[11] Network of Academic Corporate Relations Officers (NACRO) Five Essential Elements of a Successful University-Corporate Relations Program, Benchmarking Committee White Paper, August 2011.
[12] William A. Lucas et al, "Best Practices for Industry-University Collaborations," *MIT Sloan Management Review* 51:4 (Summer 2010): 83-90.

3.1.4 Integration

The VPR portfolio, working with the Associate/Vice-Deans (Research) and other members of the academic community, is committed to better coordination of efforts and to find common ground among research interests and needs across campus to enhance collaborations and greater interdisciplinary initiatives. Research centres and institutes, focused around specific areas where a combination of research resources, critical activity and opportunity, and collaborations exist, will reflect the maturation and excellence of evolving collaborative efforts in important and emerging research areas for the University.

3.1.5 Integrated Planning

The principles of integrated planning will guide the Queen's research enterprise. Recognizing the

engagement by developing and expanding international research collaborations, such as the Matariki Network, building sustained multinational partnerships, and understanding and addressing global challenges through international development projects.

ranked 9th in Social Sciences and Humanities Grants (up from 10th in 2010 rankings), 4th in Medical/Science grants (Queen's has maintained 4th position since 2009) and 7th in total research dollars.

4.2 Other Research Related Facts[15]

In November 2011, the U15 Data Exchange shared data (2009-2010) on the following research facts: Ph.D.s granted, number of Post-Doctoral Fellows, number of Research Associates/Assistants, library holdings, license income received, spin-off companies created and U.S. patents granted.

- Queen's granted 147 Ph.D.s in calendar year 2009, placing 12th out of 13
- Queen's reported 172 Post-Doctoral Fellows, placing 11th
- Queen's reported 35 Research Associates/Assistants, ranking 11th
- Queen's library holdings (total equivalent volumes) were 6,636,183, ranking it at 5th
- Queen's reported $5,756,789 in license income received between 2006/07 to 2008/09 based on a 3 year total, ranking 5th
- Queen's reported 1 spin off company created, ranking 10th (tied with 2 others)
- Queen's reported 28 U.S. patents granted between 2006/07 to 2008/09, placing 4th

5.0

5.1 Evaluating Research Strengths and Setting Priorities

Key areas for evaluating the core strengths of research programs include:

- Discipline, Field, Faculty Specific
- Bibliometric
- Economic and Social
- Knowledge Translation/Transfer, Commercialization and Innovation
- Local, Regional, National and Global
- Collaborative and Interdisciplinary Research

- Ensure that we retain the ability to recognize new evolving research programs that have a high potential for growth and success based on accomplishments of faculty or recruitment strategies that develop, or are developing, collaborations and interdisciplinary initiatives, evolving unique models or expertise to address either problems that have not yet been addressed or potential new emerging issues of great need and importance.

6.0 Processes/Mechanisms to Advance R

Over the past two decades, Queen's has built upon its research strengths, building and enhancing world-class research facilities, attracting and retaining both the bright stars of tomorrow, as well as the highly experienced, world-renowned researchers of today, which in turn helps us attract top undergraduate and graduate students, as well as highly trained post-doctoral fellows.

Queen's has a number of internal programs that support research, including: provision of start-up research funding for faculty, assistance in finding funding opportunities through existing and new funding mechanisms, internal award programs that support research, conference and travel

6.1 Vice-Principal (Research) Portfolio

The VPR portfolio currently consists of the OVPR, the ORS, the eQUIP Taskforce (eQUIP), the Office of the University Veterinarian (OUV), Innovation Park at Queen's University

The VPR portfolio offers ongoing post-award activities, including workshops, interactions with Finance, Procurement, Physical Plant Services and Environmental Health and Safety, as well as meetings with individual project leaders which ensure greater awareness of sound and effective financial management procedures.

Working with Internal Audit, the VPR provides yearly feedback on the research enterprise, flagging potential concerns[17] or soliciting support in keeping issues impacting research moving forward through the appropriate administrative channels. Areas that are reflected upon include administrative concerns, the internal control environment, IT system changes, organizational change, new legal regulations and/or contractual changes.

Queen's, as with all universities, is also subject to ongoing audits by the Tri-Council, CFI and Ministry of Economic Development and Innovation (MEDI – formerly MRI). These regular audits keep Queen's on track for developing and implementing excellent systems of pre and post-award management of research awards.

These activities require sufficient administrative support and resources. The current organizational and operational structures are no longer sustainable within the present budget model. While significant changes have been made to address the structural deficit of the portfolio, further changes are necessary, while retaining the ability to provide best-in-class service and support. An adequate level of resources is required to provide these services and support, but these and new investments in support of the research enterprise (e.g., international and communications) must also be provided from the funding being sought either directly, or through indirect costs and overhead.

6.1.4 Tools for Research Administration at Queen's (TRAQ)

Critical to achieving a successful research program, research administrators and researchers must have access to appropriate administrative tools. Queen's research activity comprises 4,700 individual projects that are managed by 1,300 individual researchers and their staff. These figures do not include other users, for example, finance and research services staff, and Department and Faculty office representatives, bringing the total number of users to upwards of 3,000 individuals.

The complexity of compliance requirements is increasing (e.g., reporting of research costs and outcomes of research). Queen's researchers collaborate with approximately 450 research funding programs and research sponsors combined in any given year. It is essential that Queen's University has a robust electronic research system to manage these 4,700 research projects and the millions of associated dollars. A system is critically needed to:

[17] For example: changes in funding programs, compliance and reporting

- capture data on research awards, contracts, and clinical trials;
- manage daily workflow;
- manage certifications (i.e., human ethics, environmental health and safety, and animal care); and
- provide efficient customer service

Changing regulations and economics in higher learning institutions have put increasing pressure on universities to produce accurate and detailed reporting. Without an electronic research project management system, reporting is very labour intensive, and there is risk associated with human error and non-compliance with funders' policies.

6.1.5 Education and Professional Training

It is incumbent upon the University to ensure that faculty and staff are knowledgeable of the range of services and supports available for their research programs and scholarly pursuits (e.g., funding opportunities; on-line tools). Importantly, they are expected to be knowledgeable of internal and external policies and guidelines associated with awards including eligible expenses. The VPR portfolio is committed to effective communication strategies to inform the research community of policies and guidelines and changes to these in a timely manner. Training programs and workshops will be provided for new employees, as well as refresher courses on research funds and programs. Opportunities to work with Human Resources and with Open Learning to develop and deliver education, training, and professional development to meet the requirements for new faculty and administrative staff at the Departmental/School and Faculty level will be explored.

6.1.6 Internal and External Communications

Research Communications plays an important role in promoting our research programs and research success, both internally and externally. Greater emphasis will be given to digital content, development and maintenance of the VPR website, and implementation of internal and external communication strategies. Promoting research success will be dependent upon the excellent linkages and coordination, and enhanced efforts to maintain these, between the OVPR and Marketing and Communications. We are committed to reintroducing an annual report of our activities and successes, to producing strategic publications for the purposes of promoting and advancing research strengths, to promoting researchers and their accomplishments through researcher recognition events and to strengthening our communications with internal, as well as external stakeholders by advancing renewal of the VPR website.

Queen's staff not only play a significant role in the success achieved by the researchers for [24]whom they work, they are also critical for enhancing and advancing the research environment on campus. The staff at Queen's is renowned for its dedication and expertise in supporting the research community.

7.0 Research Infrastructure, Libraries and Technology

State-of-the-art research facilities are a key ingredient for delivery of high quality research and training programs in support of the University's strategic research priorities. The Isabel Bader Centre for the Performing Arts, opening in 2013, will be a world-class facility where community, student performance, education, creativity and training blend to facilitate and encourage interdisciplinary and collaborative opportunities for the arts at Queen's. The School of Music, Department of Drama, Department of Film and Media and the Department of Art will share the exhibition, performance and teaching spaces within the Centre, and embrace the principle of interactivity and integration through common teaching rooms, joint courses, and shared public spaces and services.

These research facilities play a key role in attracting excellent researchers and students. The investment through the CFI, since 1997, has contributed significantly to the range of excellent facilities and equipment such as the Magnetic Resonance Imaging facility within the Centre for Neuroscience Studies. The Queen's University Biological Station[25] (QUBS) has grown over a sixty-year period through land purchases and gifts to include over 3000 hectares of land located 50 kilometres north of Kingsto

the facilities and equipment. It is critical that infrastructure, particularly with regard to new research initiatives and/or new faculty, is established in a timely and efficient manner. Appropriate mechanisms must also be in place to support sun-setting and decommissioning of facilities when these are no longer required or can no longer be supported.

The OVPR, along with the Provost and the Vice-Principal (Finance and Administration), will foster the development of coordinated and collaborative management systems, along with the Faculties, to ensure the sustainability of our research infrastructure on and off campus.

7.1 Libraries and Technology

Libraries and information technologies represent a key component of research infrastructure, essential for facilitating the creation, preservation and dissemination of knowledge. Since its inception, Queen's has seen the wisdom of investing in its libraries and researchers have

Data Centre and a strong social sciences data service in the Library where staff perform data mark-up, storage and retrieval. As well, Queen's has the advantage of a network of liaison librarians deeply embedded in Faculties who can help bridge the researcher to their discipline resources and help with connections across the research spectrum. In recent years, there has been growing activity and interest amongst researchers in the storage, mark-up and retrieval of research data. We also have outstanding physical libraries that already provide vibrant community space and could be further enhanced as collaborative research space.

Access to scholarly publications will be no less important, but it will not be limited to those purchased from publishers and will include research output made available in Open Access models. Such models provide rapid, free access over the internet to works that scholars have traditionally produced without expectation of payment. Many academic institutions are supporting Open Access by building digital repositories to distribute faculty scholarly articles and other research outputs that are also peer-reviewed and published. At Queen's, the QSpace repository delivers theses, articles and special collections to scholars world-wide, and the Open Journal System service provides a platform for publishing online journals. As a member of the Scholarly Publishing and Academic Resources Coalition, Queen's supports the principles of Open Access and the exploration of new income models for peer-reviewed scholarly publishing.[29] With many governments adopting policies to make publicly funded research freely available, Open Access has grown beyond a movement to an emerging imperative, and no doubt will increasingly shape the way in which research will be undertaken in the future.

8.0 Collaboration, Interdisciplinary and Cross-Faculty Initiatives

The SRP upholds the commitment to the breadth and depth of the research enterprise, consistent with the academic plan and informs learning and teaching at the graduate and undergraduate levels. It is within the Faculty and Department led research plans where the breadth and depth is

dialogue among multiple researchers in the development of innovative research programs, whose results may be organized and presented by individuals or by teams.

Queen's researchers have historically been engaged in a wide variety of collaborative research projects and many of these collaborations have resulted in the development of Queen's signature Research Centres and Institutes, which are formally established within the policies set by Queen's Senate. Research Centres and Institutes exist within all Faculties, within the Schools (currently Business and Law) and may also be University-based, which include those that are multi-disciplinary, crossing several Faculties, or even multi-institutional. Research Centres and Institutes are one of the important indicators of research strengths and interdisciplinary collaborative endeavours. A full review of the Senate policy will be undertaken to ensure that these remain relevant to this expectation of our Centres and Institutes.

Two of our Centres (CNS and the GeoEng), and one of our Institutes, the Cancer Research Institute (CRI)[30] offer interdisciplinary collaborative graduate programs, and others, including Queen's Institute for Energy and Environmental Policy[31] (QIEEP), Queen's-Royal Military College Fuel Cell Research Centre[32] (FCRC), and HMRC support interdisciplinary models of research.

For interdisciplinary, cross-cutting strategic foci to succeed, we must reach beyond current Department/School and Faculty structures. We are committed to promoting and fostering greater interactions across the University and between visiting scholars and researchers with our students and researchers. For our interdisciplinary initiatives to truly flourish, and reflect the level of excellence that defines our international reputation, we must also be a destination for the world's leading researchers and scholars. We must create places on our campus where the most important questions and ideas are discussed, challenged and studied in a dynamic way.

8.1 Institute for Advanced Research/Studies

The creation of an Institute for Advanced Research/Studies represents a particularly important opportunity for Queen's. Worldwide, institutes of advanced research/studies have been created to nurture research and intellectual engagement at the highest levels[33]. Some are characterized by the community of scholars drawn to the institute and have no formal affiliation with a particular school (e.g., Princeton), and others are oriented towards interdisciplinary research in advanced areas of institutional strength (e.g., Stanford). Regardless, each serves as a beacon for research excellence, building an international reputation, providing a window and door to the world, and

[30] For more information, see http://qcri.queensu.ca/
[31] For more information, see http://www.queensu.ca/qieep/
[32] For more information, see http://www.fcrc.ca/
[33] Examples of institutes include those at University of Stellenbosch (www.sun.ac.za), University of Durham (www.dur.ac.uk), University of British Columbia (www.ubc.ca), Technical University of Munich (www.tum.de), Princeton University (http://www.ias.edu), and Standford University (http://hstar.stanford.edu)

establishing their respective institutions as a destination for the world's best researchers and scholars.

Development of a new Institute for Advanced Research/Studies at Queen's will provide a focus for dialogue amongst the research community. The Institute will fulfill the mandate for developing a dynamic and evolving program focused on research excellence that is driven by the community of scholars and researchers drawn to the Institute responding to the most important questions and challenges.

9.0 Advancing International Research Priorities and Global Partnerships

Increasingly, research-intensive universities are paying much greater attention to a global focus, whe

collaborations with other investigators from Italy, Turkey, Poland, Spain, Portugal, England, the Netherlands, Germany, the US and Australia.

- The Fuel Cell Research Centre is founded on the principles of interdisciplinarity and is advancing the knowledge base for addressing the key technology challenges to the commercialisation of fuel cell applications. They regularly host international delegations and have active collaborations in Norway, the UK, Germany, the US, Brazil, Chile, India, South Africa, Denmark, Italy and several others
- The GeoEngineering Centre has been actively engaged in setting international engineering practice and policy in their areas of research focus, including Canada, the US, Europe, Australia, and South Africa. It has active collaborative research with universities in Australia, Italy, India, Japan, Norway, Switzerland, Turkey, the UK and the US.
- SNOLAB, an international facility for astroparticle physics research, is a research institute at Queen's with a Trust Agreement with its partner institutions (Carleton University, Laurentian University, Université de Montréal and University of Alberta). Typical experiments at SNOLAB have 50 to hundreds of collaborators. These collaborators are from Canada, the US, the UK, France, Germany, Portugal, the Czech Republic and India.
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