Senate discussion: Research Strategy

Introduction:

In December, the new UBC strategy, Place and Promise, was released. One of the central commitments in Place and Promise was to Research Excellence, and a number of specific goals and actions were given. The purpose of a research strategy is to provide some background and more specific details about those goals. The purpose of this discussion in Senate is to discuss the process for developing a research strategy: what has been done so far, and what remains to be done. Discussions about a research strategy began some time ago, as Place and Promise was being developed, and to date the discussions have been within the VP Research and International portfolio, with the Associate Deans Research, the Deans, and several different groups of researchers. What resulted from these discussions are the general features of a research strategy that is based on Place and Promise.

My goal is to present a draft version of the Research Strategy to Senate at the May meeting, and to consult broadly before then to develop this draft between now and May. An important part of the consultation will be the posting of a version of this discussion document on the VPRI web site for comments from the campus community. Based on the comments received and further focused discussions, a final draft document will be developed by late April. At this stage, I need the opinion of Senate on the general features of a research strategy, and the key components.

This strategy focuses attention on the Vancouver campus of UBC, because research strategies are campus specific to a large extent as they are closely tied to academic programs. While some elements of the strategy do apply to the system, it was thought that since UBC-O has defined its research strategy: (http://web.ubc.ca/okanagan/provost/__shared/assets/Strategic_Research_Plan_Final_2009-201410030.pdf), this strategy should focus attention on the Vancouver campuses, which include the main health research institutes, where most of the health research at UBC is conducted. Thus, throughout this document when UBC is referred to, it is UBC-V that is being referenced.

As shall be discussed below, there are several types of scholarly activity at a large university like UBC. It is typical to refer to these activities as research, scholarship, or creative arts, although the definition of what is meant by those labels is not always clear, and sometimes they have certain values attached to them. For the purposes of the strategy, all the different types of scholarly work done at UBC will be referred to as research to simplify the terminology. Similarly, our research can be carried out in partnership with a number of external groups, or be important to those groups or organizations. These can include: companies, government organizations or departments, research labs, civil society organizations, community groups, or aboriginal communities. In this document, external communities will be used to refer to these groups or organizations, unless a specific group is being discussed.

Why a research strategy?

One of the key attributes of research at a university is that it is driven by the researchers themselves, who have complete freedom to choose what they study, within limits imposed by research ethics. Given this, it is reasonable to ask why a research strategy is needed. There are several reasons for this, and they define the elements of a strategy:

1. What should a university do to promote and facilitate excellent research?
2. What is the correct balance between supporting "research clusters" and individual research?
3. Similarly, what should the balance be between supporting excellence in discipline-based research and in interdisciplinary research?
4. Given limits to resources, both time and money, what is the balance between supporting existing research strengths, and building potential new areas of excellence?
5. Given that research achievement in many areas is determined by infrastructure and grant support, what can be done to increase this?
6. While essentially all research requires some financial support, there are important differences in how vital this is between different fields. How can the university provide more effective support to those areas of research that are not as dependent on external funds?
7. While we may resist research strategy and "picking winners", external agencies do not, and in recent years essentially all new sources of gov't funds have had specific targets, or a requirement of a clear university strategy. How can we take advantage of these funding opportunities while preserving researcher freedom and keeping excellence, independent of field, as the main goal?
8. Given resource limitations, how can we most effectively use the discretionary funds available for research? This is probably a more important question for SSH research.
9. How can the research strategy support UBC's other strategic objectives, such as Aboriginal Engagement, International Engagement, Community Engagement, and Sustainability?

Finally, often research strategies enumerate areas of research that are deemed to be particularly important to the university. Generally, to avoid controversy, this list includes essentially all of the research carried out at the university, and is thus of limited strategic value. While a research strategy should highlight areas of strength in the research at UBC, it is important that such areas serve as examples of research excellence and not be viewed in any way as an exclusive list. There will also be general areas of strategic concern to UBC that need to be reflected in a research strategy, sustainability being a prominent example. The added focus on these areas does not imply that excellence in unrelated research is not valued by UBC, and certainly does not imply that a mediocre effort in a strategically important area

deserves support more than excellent research on a different topic. Quite the opposite is true.

The Importance of Research at UBC

It is clear that excellent research is at the very core of UBC's mission, and our international reputation is largely based on our research. While all universities have an important teaching mandate, and should strive to create the very best possible learning environment for their students, at major research universities like UBC, the meaning of learning environment incorporates research to a far greater extent than at smaller universities, and graduate education is a much more significant part of our teaching mandate.

One of the central roles of a large research-intensive university is to carry out excellent research that contributes to the education mission of the university and also has an impact on society and the world. The modern university is a unique institution, evolved over many centuries to be one of the leading drivers of change in society. In no other institution is research conducted across a diverse range of disciplines with the researchers enjoying the freedom to choose their own topics of study and having the right (and even the obligation) to disseminate the results openly. Further, this research is carried out by a mixture of faculty, staff, and students, and is integrated with the education of those students, creating a constant renewal of the research enterprise.

One of the principle responsibilities of a research university is to nurture research, creating an atmosphere where excellence flourishes and is recognized and supported. As one of the measures of excellence in research must be its impact on society and our world, the university must also facilitate maximizing that impact. Here it is important to clarify the meaning of impact, as recent discussions about commercializing the results of university research have led in many public discussions to a narrowing of the definition of research impact into one of a commercial outcome, or a combination of commercial and health outcomes. This is too narrow a view, as research at universities can have a profound impact on the way we understand ourselves and others, changing society for the better. Excellent research can change public policy, help us to understand and eliminate conflict, and help create a better society. Of course, much of the research at universities will lead to a stronger economy and more jobs, and the creation of better health outcomes. Although it is risky to create a single summary of meaningful impact for research and scholarship, perhaps the notion that excellent research creates a better quality of life or a better world is one that embraces the full scope of our efforts. We must take our vision statement seriously, that we "support outstanding research to serve the people of British Columbia, Canada, and the world".

Although any strategy will highlight certain research areas or themes as being important to the university, it should be clearly understood by the readers of that strategy that this is not an attempt to steer the research of the university community

down defined paths. This would be an anathema to the UBC community, as university research must always be driven principally by the researchers, who are free to define their own areas of inquiry. One of the duties of a comprehensive university is to promote excellence in all areas, as broad-ranging excellence is at the heart of a large university's strength. Particularly important to a university is research whose principal goal is creativity, discovery or inquiry, without predefined applications. This research, which is conducted almost exclusively at universities, creates the new ideas and understanding that lead to dramatic changes in society, and disruptive new technologies. However, there is not a clear distinction between what constitutes "fundamental" research and "applied" research. Very foundational life science research is carried out in our affiliated hospital research institutes, with the underlying goal being to improve health care. Similarly, very fundamental research in science or social science generally is based on the goal of solving a problem or creating a better understanding of a problem. Although researcher interest is the driving force for most university research, a large fraction of researchers do have some application in mind for their research results, even if that application is quite far into the future.

Most university research relies on external support, either through direct funding of that research, or through the understanding that research is an important part of a research university's mandate, in addition to teaching. At UBC, the funding provided by external groups to support our research activities is close to half a billion dollars per year, an amount that is almost equal to the operating budget of the university. In addition, a large fraction of the operating budget supports research, through provision of research leaves for faculty, support of research graduate students, funding of the library, etc. This combination of support for research means that a research strategy must address ways in which all of the support, including the infrastructure available for research and the regulatory and business functions associated with the research enterprise, should be discussed in the strategy.

Diversity of Research and Scholarship

One of the greatest strengths of a large research intensive university is the range of research activities. This range of activity defines the cultural framework of the university community, and also creates an environment around the university that is critical to its social, cultural, and economic well-being. From creative and performing arts, where the production of a work of art or a performance is the scholarly creation, to engineering where the goal might be to improve an industrial process, all of the research at the university can contribute to improving lives and furthering education.

However, the diversity of the research effort also creates a challenge to creating a research strategy and providing appropriate support for that research. For those engaged in more solitary research, such as pure mathematics research or some types of humanities research, there is not a need for significant research funding, but there is often a need for access to excellent library resources and time for

detailed reflection. The creative arts do require significant financial support, but cannot obtain this through standard research grants. Most research does require significant external financial support, and increasingly support is needed for complex multidisciplinary projects, in addition to the more standard types of projects driven by one or a small group of single discipline investigators. For UBC to achieve its full potential, this diversity of needs must be recognized, and strategies to support these various requirements must be developed.

Defining excellence, selected examples:

There are several strengths and unusual features of UBC and Vancouver that shape our research enterprise. Our location on the west coast of Canada and our immigration patterns have led to a historical and important focus on Asia by UBC researchers. This traditional strength at UBC has become more important as the Asian economies have strengthened and as the local population and our students have become increasingly from Asian family origins. The strong and very diverse first nations communities in BC leads to a significant amount of research being done in partnership with aboriginal communities. The significance of resource industries in BC has resulted in strength in such areas as forestry, geology, and mining engineering. One of the legacies of the late Michael Smith is our strength in genome science and biotechnology. As with any major university, areas of research strength have evolved and will continue to evolve through a mixture of fortunate circumstance and design. While it is always a dangerous thing to "pick winners" from our very large research portfolio, there is value in using some examples to define aspects of research excellence, as long as it is understood that the examples are not comprehensive or exclusive. With this in mind, some possible examples are listed below, with the reasons why they are being highlighted. Although all the examples listed below have attracted considerable international attention, they display different aspects of research excellence at UBC.

- Quantum materials:
  This area of is one of areas at UBC where a critical mass of internationally renowned researchers have established a research cluster that is one of the best in the world in its field. Built on long-standing strength in condensed matter physics at UBC, this group has been built up through CRC appointments, and significant success in attracting external research funding. Their research excellence is reflected in the impact of their publications, major national and international awards, and substantial international partnerships with some of the world's leading universities and research institutes.
- HIV/AIDS:
  Several different research groups at UBC and our affiliated health research institutes have carried out important research into treatment and prevention of HIV/AIDS, with much of the research addressing vulnerable communities in BC, most notably in the Downtown Eastside. In addition to setting new

standards for treatment of HIV/AIDS, this research has had enormous public policy impact and international reach, and has established UBC as one of the world's leading centres in this area.

- MOA/Partnership of Peoples:
  The newly reopened MOA is a showcase for UBC and UBC research from several different points of view. In addition to being the largest single CFI/BCKDF award to UBC, it remains one of the most important CFI awards nationally in social sciences and humanities. The importance of MOA is that it is creating a new paradigm for collaborations between university researchers and aboriginal communities, and is setting new standards for the way museums understand and display cultural artifacts.
- Centre for Drug Research and Development:
  CDRD builds on UBC's excellent drug discovery research, and provides a new model for knowledge transfer and drug development. CDRD is unique in Canada, and there are very few similar organizations anywhere in the world. As a result, it has attracted national and global attention as an innovative answer to a common problem in translating laboratory results into new treatments.
- Centre for Interactive Research in Sustainability:
  This living building, currently under construction, is not just one of the world's most sustainable large buildings, it is also a technical and social experiment, an example of strong partnership with external groups and companies, and it will be a centerpiece for UBC's Sustainability Initiative.

Key theme areas and partnerships

In addition to the goal of building areas of research excellence at UBC with no targeting of areas of research, the research strategy must take into account factors that are vital to UBC's overall strategy. While many of the actions below that are designed to improve the overall research enterprise will also help specific areas or partnerships that are especially important to UBC, we will also need to take specific actions in support of these other goals. In Place and Promise, there are several commitments beyond Research Excellence that have a research component, and the research strategy should reflect this. In addition, much of our research (nearly half of our research funding) is carried out in partnership with the health authorities, using facilities and personnel provided by the health authorities. The health authority research institutes where most of this type of research is carried out set their own research agendas, and have their own strategic plans. The reality of these vital partnerships must be reflected in a research strategy, given the enormous importance of this health research. Increasingly, our research is being done in partnership with external communities, who help us to define the research, conduct the research, apply the results, or help pay for the work.

With this in mind, some of the research areas, themes, and partnerships that are strategically important to UBC are given below.

Sustainability: Campus as living laboratory

The UBC Sustainability Initiative has campus as living laboratory as one of its important themes. The CIRS project is an example of this, as is the newly announced partnership with Nexterra. These important partnerships to advance sustainability will not be restricted to technology development, but will include partnerships in social research and policy development, which are equally important features of sustainability.

Partnerships for health research

Health education and research at UBC is carried out in partnership with BC health authorities. The importance of this collaboration is reflected in the fact that most of our health researchers work at health authority research institutes and hospitals, and most of our external funding for health research is awarded to researchers at the health authorities. In fact, nearly half of the total external research funding at UBC is awarded to health authority researchers. Currently, discussions about unifying the administration of research at health authorities is underway.

Research with aboriginal communities

In Place and Promise, one of our commitments is to Aboriginal engagement. This engagement has a research component, as given by one of the actions listed to support this commitment:

- Strengthen and expand research grounded in significant community collaboration and consultation.

MOA/Partnership of Peoples has already been mentioned as an example of this type of research, and the newly created Aboriginal Strategy addresses this important area.

Teaching and learning

Most of the research work done at UBC is conducted by graduate students and postdoctoral fellows, so there is a very strong connection between research excellence and teaching and learning for those students. However, most of the students at UBC are undergraduates, many of whom are never directly connected to UBC's excellent research. While not all undergraduate students want to carry our advanced research, it is important that the opportunity for direct involvement in research be more available, and that all students at least get exposed to UBC's research as part of their studies.

International engagement

We are in the process of developing an International Strategy for UBC, so there is not a need to duplicate that effort in the research strategy. However, international partnerships are an important feature of research excellence, and much of the research at UBC has a necessary international component. Support for internationalization will be an important component of the strategy.

Community engagement:

One of the central commitments in Place and Promise, this will be partly addressed under the goal to become a world leader in knowledge exchange and mobilization, as much of our strategy for that will be to strengthen partnerships with external communities.

Actions to promote research excellence:

In "Place and Promise", the new UBC Strategic Plan, one of the important commitments is to research excellence: *The University creates and advances knowledge and understanding, and improves the quality of life through the discovery, dissemination, and application of research across a wide range of disciplines.* There are a number of actions given in Place and Promise in support of this commitment, and these form the basis for providing support for UBC's research effort. The important goals that have been defined for research excellence are:

1. *Increase the quality and impact of UBC's research and scholarship*
2. *Be a world leader in knowledge exchange and mobilization*

Meeting these goals will require us to provide better support for UBC's researchers, particularly for interdisciplinary research, research done in partnership with communities and organizations external to UBC, and research with international partners. The specific actions given in Place and Promise that support the goals given above are still fairly high level, and one of the goals of this section is to suggest specific strategies that will make up these higher level actions. In what follows, the action from Place and Promise forms the heading for a more detailed set of strategies that will create the overall action.

The presentation below is in the format:

- The goals from Place and Promise are in italics
- In Place and Promise, each of the goals is supported by a limited number (2-4) of specific actions. These actions from Place and Promise are underlined.
- Some suggestions for more finely defined actions from the VPRI portfolio are then given as bulleted points.

Goal: *Increase the quality and impact of UBC's research and scholarship*

<u>Focus on areas of excellence</u>

This is the single most important action in the research strategy, although other actions all must support this one. Here the main purpose is to provide the sort of support necessary to develop and strengthen areas of excellence that emerge, and to strengthen and expand existing areas of excellence. This is somewhat different from the initiatives described under the next action although the resources used overlap. This action will create the most comment, as clearly excellence in research is rooted in getting the best researchers (faculty, students, and postdocs) to UBC, providing them with the support necessary for them to excel at research, and retaining them at UBC, independent of field. However, it is also true that we cannot hope to be

world leaders in all areas of research, and so decisions do have to be made about how to allocate resources in a way that creates global excellence in a few areas. This happens quite naturally in that it is difficult to attract the best talent (faculty, students, postdocs) unless we have a strong reputation in a given area, and it is even harder to retain that talent unless the research environment is excellent. There is also a synergy that develops between groups of leading researchers that creates better research and leads to greater possibilities for research funding. Graduate training is also greatly improved if there is a critical mass of excellent researchers in a given area. This attracts better students and increases their chances for success, which in turn strengthens the research. In addition to nurturing research excellence, we have to do a better job of recognizing and promoting that excellence, especially to the external community. This increases support for university research and enhances our reputation.

- Provide focused assistance for researchers who are developing larger scale initiatives, or for specific research funding opportunities as they arise, through a centralized grant facilitation office and better coordination of our network of facilitators.

In recent years we have been able to provide support for Networks of Centres of Excellence, Centres of Excellence for Commercialization of Research, and Canada Excellence Research Chair proposals, based on methods developed for institutional CFI proposals. This effort has led to great success in these applications. We need to strengthen and consolidate these activities.

- Provide seed funding resources to enable organization of larger initiatives.

While it is not good to have long term research funding from internal sources for these large initiatives, there is frequently a need to provide an initial investment to help get them started. We need to consolidate and clarify the nature of these seed funding opportunities.

- Work to develop international partnerships for defined areas of excellence.

This overlaps with the international strategy, but it is important to use international connections to strengthen existing areas of excellence.

- Work with Development to define campaign opportunities for research initiatives in areas of excellence

A great deal of potential support for research comes from philanthropy. Many of our most significant fund-raising success stories have come because of strong research groups, such as the quantum materials group. Increasing the cooperation between development and VPRIO will enhance this activity and allow for more strategic focus.

- Consolidate and rationalize the internal research support.

At present, there are several funds available to researchers, such as the Hampton Fund, the Martha Piper Fund, the Peter Wall Institute, International Initiatives fund, and discretionary seed funds. The amount of money available is actually quite significant, a few million dollars per year. There needs to be a review of how this money is being used, and how all these funds could be better coordinated and do a better job of supporting and developing research excellence.

- Increase number external research prizes awarded to UBC faculty.

Having our faculty members win prestigious external awards not only provides recognition of their excellence (and frequently financial reward as well), it also greatly enhances the reputation of UBC researchers and UBC. A Presidential Advisory Committee on Major Awards will be established with a goal to increase both the number and the quality of award nominations from UBC.

- Develop a better understanding of the areas of research excellence at UBC.

To better represent ourselves to potential partners and donors, and to better support research excellence independent of field, we need to develop better means of determining our areas of excellence, means that recognize inherent differences between research cultures. These evaluations will be useful for unit reviews, and in resource allocations in support of research excellence.

<u>Increase UBC research and graduate support funding in both absolute and relative terms, including support from non-traditional sources</u>

For most of the research activities at UBC, the amount and quality of research that can be done is controlled by funding levels. In addition, our ability to recruit and retain faculty, students and postdocs is also frequently tied to funding levels. While the role of graduate students in research depends on the research area, for most of the research done at UBC, the research effort depends on involvement of graduate students in the research projects, and the quality of the research that can be accomplished is dependent on the quality of graduate students involved in the research. Even in areas where graduate students are not part of a research team but work independently, the overall level of research improves as the number and quality of students improves, and the quality of the research programs is reflected by the quality of research graduate students attracted to that program. Thus, to improve research at UBC, and to build excellence, increasing the amount of money available to support researchers and graduate students is critical.

- Individual grant facilitation and internal review

One of the more successful initiatives to increase researcher success at UBC over the past decade has been the use of internal review, for health researchers through HeRRO, and for institutional CFI applications through the CFI office. We have recently been able to expand the grant facilitation available to researchers, through adding two new permanent positions to the VPRIO. We have also been discussing with the emeritus faculty enlisting their support for grant facilitation and review. A top priority in the short term will be to consolidate and strengthen these activities.

- Increased scholarship support and funding packages for graduate students

Recruitment of the best graduate students will require better support packages, and more significant scholarship funding for foreign graduate students.

- International funding opportunities

Now that the International Office is within the VPRI portfolio, more focus can be put on increasing funding for international collaborations. This will be done through more effective grant facilitation, and providing better and more timely information to researchers.

- Continued cooperation with development on foundations

Much of the research at UBC is supported by charitable foundations. While this support is well established and understood by health researchers, we could do a better job of connecting researchers and possible foundations sources of funding for their research. This effort will be done in cooperation with UBC Development.

<u>Improve infrastructure to support leading edge research</u>

- Improved business practice and research information

Continue to improve support service for researchers to reduce the administrative burden and improve efficiency.

- Create fellowships to support leading researchers, advocate for release time for younger researchers

One of the most important issues for many areas of research is the need for time to get research done. This is especially true for researchers in the early stages of their careers, when they are trying to establish a reputation. Work needs to be done in teaching assignments to be sensitive to the needs of pre-tenure researchers. For all researchers, a competitive fellowship program to add to the supply of internal research fellowships, should be investigated.

- Create seed fund to support creative productions

For the creative arts, money is needed to mount productions or to complete works. As there are limited funding sources, it might be possible to create, perhaps through fundraising, a seed investment fund to support the creative arts.

- Investigate the formation of an institute for the humanities.

Humanities scholars often work in isolation, which can disadvantage them compared with other disciplines. An institute of humanities, which would include an interdisciplinary graduate program, could strengthen humanities research and graduate studies. It would be useful to investigate programs like this at other leading universities (Toronto, Hebrew University, etc.) to see if such a model would be useful at UBC.

<u>Expand recruitment of top ranked graduate students and postdoctoral fellows</u>

- Improve international recruitment of students

There is currently no developed strategy for recruitment of international graduate students. If UBC is to expand its research graduate programs, we will have to recruit a larger number of highly qualified international graduate students, so a recruitment strategy should be developed.

- Lobby for creation of improved fellowships for graduate students and postdocs.

Covered above.

- Work with MITACS to improve opportunities for graduate internships, and to expand international internships.

By creating opportunities for our graduate students to have international experience, and experience off campus (in industry, government, or civil society organizations), we strengthen our graduate education.

Goal: *be a world leader in knowledge exchange and mobilization*

It is a given that one of the most important determinants of excellence in research is the opinion of peers, who are other researchers and generally other academics working at universities around the world. Without diminishing the need to have our research recognized by other researchers, often for research to have its maximum impact, we have to connect with non-university communities. Some obvious examples are in health research, commercialization and public policy development. A potential breakthrough in treatment of disease that is discovered in a laboratory needs to be translated into clinical practice if it is to have an impact on health care.

Although universities can facilitate commercialization of research results, they are not commercial enterprises, which means partnerships with the private sector are necessary for commercialization of university discoveries. While university research can and should have an impact on public policy, we must partner with external agencies to see our research translated into policy practice.

Increase emphasis on engaging external communities in research at UBC

It is also important to move beyond a traditional model of knowledge translation, where the role of the university is to generate knowledge and then bring enlightenment to those outside the university gates. This notion of one-way knowledge exchange is dated, and in some cases reflective of a colonial mentality (for example the historical practice of research "on" aboriginal communities). What needs to be promoted is the concept of partnerships, where university researchers learn from external communities and carry out their research in partnership with them. Of course, this is not necessary or even desirable for all university research, but many types of research can be improved by increased partnership.

- Facilitate the development of partnerships necessary to make "campus as living lab" successful.

  These partnerships are not restricted to ones with external companies for technology development, although those partnerships are an important component to campus as living lab. On campus partnerships and work with external organizations and governments are also an important feature of our sustainability strategy as it is important to not only change the way UBC behaves, but to have successful strategies implemented in the broader community.

- Expand university research capacity by fostering and managing partnerships and collaborations with non-UBC entities

  Both CDRD and CIRS have shown the power of external partnerships. The Clean Energy Research Centre has a long standing mutually beneficial partnership with the NRC Institute for Fuel Cell Innovation, and UBC has strong and long-standing ties with the TRIUMF national laboratory on our south campus. The range and scope of research partnerships with off campus communities needs to expanded.

- Develop and expand research carried out in partnership with aboriginal communities.

The example of MOA/Partnership of Peoples should be built upon and extended to other areas of research. A strategy for this has been outlined in the Aboriginal Strategy.

- Develop an integrated industry engagement strategy for UBC
  There are several different levels on industrial engagement, from partnership for commercialization or research through to provision of technical services such as instrumental analysis or animal care. In all cases, we need to develop a mutually beneficial strategy to facilitate this engagement at all levels, and to use this engagement to improve our research efforts. A key part of this will be the creation of a high level external advisory committee who will help define the engagement strategy.

- Work to expand knowledge and appreciation of the importance of UBC research

  Continued public and political support for all aspects of our research effort rely on a better understanding and appreciation for our research. This promotion of our research must be across the full range of activity, and not rely on simply highlighting research with clear applications. Clearly, a key part of this effort will be directed at politicians, public servants, and important opinion leaders, along with the local and international community.

<u>Expand the multiplicity of knowledge exchange channels, such as global access licensing</u>

- Create and/or identify and implement alternative Intellectual Property (IP) mechanisms for data, research tools, software and other research inventions
  This is a continuation of our evolution in how we treat IP that is developed by UBC researchers, to improve our record on commercializing that IP.

- Build relationships with Centres of Excellence for Commercialization and Research and Business Led Networks of Centres of Excellence to develop and advance UBC inventions

  These relatively new programs of funding from the tricouncils have been very successfully exploited by UBC researchers, such that we have several CECR's based at UBC. These centres and networks provide new channels for knowledge exchange and research translation.

- Take an international leadership role in the development of Global Access practices and apply these practices to UBC inventions

  UBC has taken a leadership role in adopting Global Access licensing practices, which make technologies available at cost to poor countries. We now need to

develop effective means of identifying and helping to develop these technologies, in partnership with southern countries.

<u>Develop a campus strategy for making UBC research accessible in digital repositories, especially open access repositories</u>

- Work to develop a central scholarly publications and data repository to ensure results of UBC research are freely accessible and meets the NIH and CIHR requirements regarding "open access"

  This is a partnership with UBC Library, and helps to promote more openness in our research.