



**SUBJECT** RESEARCH AND SCHOLARSHIP AT UBC

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**EXECUTIVE SUMMARY**

Outline of UBC research strengths as well as challenges and opportunities to include a few 'rising star' researcher presentations. Demonstrate how the research efforts of the University are tied to the implementation of the University's Strategic Plan, including a SWOT analysis.

**Attachments**

- 1. Research and Scholarship at UBC Briefing Note

**STRATEGIC CORE AREAS SUPPORTED**

- People and Places
- Research Excellence
- Transformative Learning
- Local / Global Engagement



THE UNIVERSITY OF BRITISH COLUMBIA  
Office of the Vice-President, Research & Innovation

# Research and Scholarship at UBC

January 2019

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## Overview

Public universities are the springboard for ground-breaking research in Canada. Canadian researchers from across the humanities, the creative and performing arts and the natural, life, health and social sciences influence all aspects of our lives by tackling critical questions about diverse topics such as the beginnings of the universe, the role of religion in human existence, how stem cells can be used to treat diabetes, how to enable computers to learn and how art can enhance ecological efforts. Researchers generate novel insights and theories, landmark discoveries, and critical new knowledge leading to a range of societal, economic, and environmental impacts such as improved patient care, new software and digital tools, evidenced informed policies and enriched civic and cultural life.

We acknowledge that much of this scholarship and research activity at UBC occurs on two main campuses on the traditional, ancestral and unceded territory of the Musqueam people (Point Grey) and Syilx Okanagan Nation (Okanagan), and that other research activities take place on Indigenous lands throughout British Columbia and beyond. UBC is committed to deepening its partnerships and relationships with Indigenous peoples to engage in collaborative research to benefit Indigenous communities.

The discoveries and outcomes produced by UBC scholars and researchers are broadly recognized as world-leading across a wide range of traditional and emerging measures and are critical to UBC's global standing. As the most research-intensive university in British Columbia (BC) and with the second highest research income in Canada<sup>1</sup>, UBC helps to attract the highest quality individuals to work and study who create ideas and solutions that generate positive socio-cultural, economic, and environmental impacts.

The research conducted at UBC has a direct impact on the BC economy. Approximately \$310M of UBC's over \$650M in annual research funding is used to support post-doctoral fellows, staff and students. A study of Ph.D. graduates from UBC Vancouver (2005-2013) found that half of those that moved to the private sector stayed in BC and are contributing directly to the provincial economy.<sup>2</sup> Overall, the estimated value of sales and products that incorporate discoveries from UBC research is over \$11.5 billion.

UBC research also directly informs undergraduate and graduate teaching and academic programming. UBC research thus helps to shape the next generation of citizens and to determine the course of Canada's future.

This document has been prepared for UBC's Board of Governors to describe strengths of the research environment at UBC, challenges facing both researchers and the institution, and opportunities for improving the state of research at UBC. This document focuses on strengths, challenges and opportunities common across the UBC system (a tabular view is available in Appendix A). All members of the UBC community are encouraged to submit feedback on the document to <https://research.ubc.ca/research-at-ubc>.

Gail Murphy  
Vice-President, Research and Innovation

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<sup>1</sup> <https://www.caubo.ca/knowledge-centre/surveysreports/fiuc-reports/>

<sup>2</sup> [http://outcomes.grad.ubc.ca/docs/UBC\\_PhD\\_Career\\_Outcomes\\_April2017.pdf](http://outcomes.grad.ubc.ca/docs/UBC_PhD_Career_Outcomes_April2017.pdf)

## Strengths of UBC's Research Environment

UBC consistently ranks as one of the world's top research universities. The new strategic plan, Shaping UBC's Next Century, calls to build on this foundation to further "lead globally in research excellence, discovery, scholarship and creative endeavors".

As a community and an institution, UBC has many research strengths on which to build: four of which are highlighted below. These strengths all contribute to advancing the core area of research excellence in the Next Century strategic plan.

### Broad and Deep Community of World-class Researchers

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*The world-class strength of the thousands of UBC research and scholars is often recognized through national and international awards. Publications produced by UBC researchers impact scholarship around the world.*

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UBC's community of researchers and scholars—faculty, post-doctoral fellows, research associates, students and staff—is integral to the research conducted at UBC. These researchers and scholars, who number in the thousands, bring the curiosity, experience and expertise to generate new knowledge and insights, and the strength of their research furthers UBC's increasing global recognition and reputation.

Two ways to gauge the excellence of UBC's researchers and scholars are through external awards and scholarly output measures. For instance, over the last five years, 22 individuals associated with UBC have received the Order of Canada and 119 individuals have been designated as national Vanier Scholars recognizing doctoral students who demonstrate both leadership skills and a high standard of scholarly achievement. Using data about disciplines that publish in peer-reviewed journals, from 2013-2018, UBC researchers published over 59,000 publications that have received over 722,000 citations to date. Of these publications, 22% are in the top 10% of most cited worldwide and 42% of publications are in the top 10% highest tier journals as indicated by cite score. In 2018, UBC also had more highly-cited researchers than any other Canadian university.<sup>3</sup>

UBC attracts high-quality researchers and scholars, whether faculty, staff or students, to apply to UBC. Both campuses see opportunities for ensuring that UBC continues to attract and retain world-leading researchers and scholars, both senior and early career.

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<sup>3</sup> <https://hcr.clarivate.com/>

## World-class Strengths in Many Subject Areas

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*UBC researchers are active across many subjects and demonstrate world-class excellence across a range of areas.*

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UBC researchers and scholars demonstrate world-class strength in many subject areas. One way to gain insight into the strength of UBC research is through rankings computed by third-party organizations. Many ranking approaches exist: each approach considers different kinds of data and weights the data differently. According to the Academic Rankings of World Universities (ARWU) subject rankings, which is based largely on research outputs and highly-recognized awards, UBC ranks in the top 50 in 26 subjects (2019). For 9 of these subjects, UBC is ranked first in Canada. According to the Times Higher Education (THE) subject area rankings, which also include a reputational survey, UBC ranks in the top 50 in 8 different fields. In addition, UBC has world-class strength in many subject areas that are not well captured by many international ranking methodologies such as the humanities and creative and performing arts.

## Growing Strength in Interdisciplinary Approaches

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*Collaboration involving interdisciplinary approaches is key to tackling challenging complex problems. UBC has many examples of world-class interdisciplinary research and is providing pilot program support to increase UBC researchers' ability to pursue interdisciplinary approaches.*

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There is a growing trend for teams of researchers to work together using interdisciplinary approaches. These approaches are often taken to make progress on challenging, intransigent problems, such as climate change or the opioid crisis. As one indication of interdisciplinary research at UBC, approximately 1.5% of UBC affiliated publications (SciVal) are classified as interdisciplinary. As another indication, over the last three years, nearly 10,000 of online Canadian and international news articles and posts can be considered to be about interdisciplinary UBC research.

In response to a growing trend towards funding programs seeking and supporting interdisciplinary approaches, UBC has been running pilot programs at each campus aimed at increasing interdisciplinary research efforts. Across the two campuses, over thirty clusters are being supported at any given time, spanning such topics as advanced materials, the arts, ecosystem sustainability and community health (Shaping UBC's Next Century, Strategy 6: Collaborative Clusters).

## World-class Facilities and Infrastructure in Many Areas

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*UBC has substantial world-class equipment and space, in part established through success in national infrastructure competitions. Infrastructure development at the Okanagan campus is in an earlier stage; steps are being taken to improve the research plant at UBC Okanagan. The world-class equipment and space is an enabler for world-class research.*

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The kinds of space and equipment needed for research varies enormously by discipline. For instance, some space must meet specific requirements, such as low vibration or wet lab space with fume hoods. Other space might need to be of a certain size or configuration to enable design activities or performances. UBC has invested significantly in research space over the last ten years. Laboratory space and research project space amounts to over 116k m<sup>2</sup> on the Vancouver campus and over 10k m<sup>2</sup> on the Okanagan campus.<sup>4</sup> As a quickly evolving campus, UBC Okanagan's existing space and infrastructure do not match its rapidly growing research profile. Plans are underway to develop needed research space at the Okanagan campus.

Some areas of study also require highly-specialized expensive equipment. UBC researchers have been successful at using the federal Canada Foundation for Innovation (CFI) competition and provincial matching from the BC Knowledge Development Fund (BCKDF) to enable the procurement of such equipment and for space to be configured to support its use. Over the last five years, UBC researchers have attracted CFI/BCKDF funding to support over \$328M of facility and infrastructure projects. To make the most of these investments, UBC has been piloting the UBCV-UBCO Mobility grants<sup>5</sup> to enable greater cross-campus research collaboration and interaction.

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<sup>4</sup> Capital Planning & Strategic Project Development, UBC Infrastructure Development

<sup>5</sup> <https://research.ubc.ca/collaborative-research-mobility-awards>

## Weaknesses in UBC's Research Environment

UBC researchers, like their colleagues at other institutions, face challenges including securing appropriate funding, complying with federal, institutional and other regulations, recruiting appropriate students and more. In this document, we focus on weaknesses common across the UBC system, particularly in relation to peer institutions. In addition, each UBC campus and site has unique challenges that are not described or analyzed in this document.

### Attracting Top Doctoral Students and Postdoctoral Fellows

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*UBC attracts many outstanding doctoral students and postdoctoral fellows who are essential contributors to UBC's research excellence in many areas. However, limited funding constrains many programs from attracting the top students and fellows they desire, impacting the research and learning environment.*

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Graduate students and post-doctoral fellows are critical members of research teams in many areas. They often hold knowledge of critical research techniques, bring unique perspectives and drive solutions to hard problems. These students and fellows continue on to a diverse range of careers in the academy and beyond, and become UBC alumni who extend UBC's global reach.

Overall, UBC has many outstanding doctoral students and postdoctoral fellows: UBC students have succeeded in attracting the highest per capita federal doctoral funding rate in Canada to UBC, and UBC has the highest success rate in federal Banting postdoctoral fellowships. However, recent consultations for the UBC Vancouver Faculty of Graduate and Postdoctoral Studies found that some programs experience difficulties in attracting the most competitive students and fellows given current funding levels. Some programs also require more students and fellows. Similar challenges are experienced at UBC Okanagan.

The quality and number of doctoral students and postdoctoral fellows also impacts teaching and learning, as graduate students and post-doctoral fellows often serve as teaching assistants or course instructors and mentor undergraduate students pursuing research experiences. The quality and number of students and fellows also impacts the talent available in the BC economy.

### Sustaining Research Infrastructure

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*Researchers face challenges in keeping specialized infrastructure (often equipment) usable and operational due to costs for service, upgrades and specialized personnel. This specialized infrastructure is necessary to conduct the research.*

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UBC has been very successful in CFI/BCKDF competitions to bring necessary infrastructure to UBC's two main campuses. Infrastructure funded through these competitions comes with an envelope of operation and



maintenance funding that can be spent over seven years. Often, this funding is not sufficient to maintain service contracts and specialized technicians needed to operate the equipment (or space) efficiently. As a result, researchers must invest significant time seeking alternate funding in the event of equipment failure, or when upgrades are needed, and typically must attempt to solicit use by other researchers who may contribute to the costs of operating the space or equipment. This time would be better spent by researchers working on the research problems of interest. In addition, often the best path forward is to replace existing infrastructure through new funding which negatively affects UBC's sustainability goals, as equipment for which the lifespan might be extended becomes waste.

## Recognition of Demonstrated Research Excellence

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*Many areas in which UBC is world-leading lack widespread recognition of their research excellence. A lack of global profile of these areas hinders the attraction of top scholars and researchers, the formation of global partnerships and the pursuit of additional funding sources.*

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UBC's research has a powerful impact on BC, Canada and beyond. However, the recognition of the excellence of UBC research lags. For instance, an analysis of rankings data shows a gap between how UBC research is perceived and its world-class nature. As the perception of UBC plays a role in whether individuals decide to pursue opportunities at UBC, whether as faculty, staff or students, or as an organization looking to fund or partner for research, the perception of UBC should better reflect the reality of UBC's world-class research. UBC must be aware of the need to develop programs to engender the visibility of UBC research beyond the boundaries of its campuses.

## Support and Recognition of Community-engaged Research

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*Many UBC researchers are involved in community-engaged research, which often requires substantial time and involvement of both researchers and partners. UBC lacks systematic institution-level support to recognize the timelines, challenges and benefits of community-engaged research.*

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Input gathered for the Shaping UBC's Next Century Strategic Plan indicated a desire across many UBC stakeholder groups, including UBC researchers, for better support for community engagement. With respect to research, community engagement can take many forms, with a common theme being the participation, and potential direction or co-direction, of the research by community members. It includes a range of community practices that are collaborative, action oriented, equitable and are based on sustained relationships of trust.

Community-engaged research often requires substantial time and involvement of researchers and partners to collaboratively define and scope problems of interest, determine appropriate collaborative research approaches, undertake the research and share results in a variety of forms suitable for both the researchers' academic communities and the partners' communities.

UBC does not have a systematic institution-level approach for recognizing the timelines, challenges and benefits of community-engaged research. Improving support and recognition of community-based research can ensure that the talents of UBC researchers can be combined with the talents of communities to produce globally leading research that is applied within local communities to impart positive change. This support is particularly important for strengthening collaborative research with Indigenous communities.

## Support for Award Nominations

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*Minimal institutional support is available at UBC to help advance award nominations. When deserving scholars and researchers are not recognized through awards, it impacts their morale and can also impact their ability to attract funding. UBC's reputation is also impacted.*

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Discipline-specific, national and international awards recognize the strength of UBC researchers and scholars, help support applications for funding of scholars and researchers and help to enhance the reputation of UBC. Developing successful nomination packages requires coordination between experts in the nominee's area of research and experts in the style and format of nomination packages. Being successful for awards of high-stature also requires planning to progress from area awards, through national awards to international awards.

Every year, many people across UBC help to prepare nominations. Minimal institutional support is available to help develop and advance nominations and focuses on nominations for high-stature awards. Discussion with peer institutions suggests that UBC's support for award nominations lags behind that of its peers.

## Threats to the UBC Research Environment

There are a number of threats to UBC research that are common to other national and/or global institutions. For instance, researchers will often cite challenges finding the time to devote to their research endeavours. Researchers across the world are affected by geo-political circumstances as access to important sites (historical, cultural, environmental, etc.), to collaborators and individuals, and to funding can shift with the international climate. In Canada, although the federal government has recently increased the funding available for research, the number of researchers across the country means continuing challenges for researchers to attract sufficient funding for their research programs.

This section focuses on two threats more specific to the UBC research environment.

### Impact of Cost of Living on Recruiting and Retaining Excellent People

The high-cost of living in Vancouver and Kelowna is well-documented. These costs hamper the recruitment and retention of excellent researchers to UBC's two campuses. Programs such as faculty housing incentive plans, rent geared to income and minimum graduate stipends help to mitigate some of the effects of the cost of living. However, as research at UBC is fully dependent on great people, UBC must be cognizant of ensuring appropriate programs are in place to recruit and retain great researchers, including faculty, post-doctoral fellows, staff and students.

### Low Provincial Research Funding

Comparing overall rates of provincial funding for research is challenging given the different nature of programs and structures of reporting. In comparison to Ontario and Québec, BC provides less access to research operating grants and graduate student scholarships. For instance, last year, \$30,000 in provincial research funding was available for each faculty researcher in Québec whereas \$12,000 was available in Ontario and only \$8,000 was available in BC.<sup>6</sup> This amount does not include dedicated infrastructure and equipment funding, and thus directly impacts UBC's ability to advance research excellence by enhancing opportunities for graduate students and postdoctoral fellows and maintaining a first-rate research environment by providing operational supports and access to computing and research infrastructure.

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<sup>6</sup> <https://www.caubo.ca/knowledge-centre/surveysreports/fiuc-reports> and Statistics Canada

## Opportunities for UBC Research (>\$5M annual)

With additional investment, UBC researchers are poised to further accelerate the investigations that help to inform our understanding of history, enrich our lives through creative works, improve health care delivery and develop new technologies to improve the world around us.

There are many areas deserving of investment. This document focuses on suggestions for operational investments of the magnitude of \$5M per annum that could substantively change and accelerate the research trajectory of UBC researchers. Each opportunity is associated with specific strategies from Shaping UBC's Next Century plan. These suggestions require consultation with UBC stakeholders. Any information about potential projects is to give shape to the potential opportunity; details of any programs would require design by appropriate stakeholders. It is expected that other areas of weakness likely requiring smaller annual amounts of investment will be considered through other mechanisms. Appendix A summarizes current relevant initiatives.

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### Increase Numbers of Early Career Researchers (Strategy 1: Great People and Strategy 8: Student Research)

Early career researchers invigorate research programs. They bring new ideas, perspectives, approaches and techniques to bear on solving emerging and existing problems. Bringing additional early career researchers—faculty, post-doctoral fellows and graduate students—to UBC can enable new research and learning directions.

UBC could significantly enhance its research trajectory by introducing programs to increase the number and quality of early career researchers at UBC. For instance, to increase the number of early career faculty, a coordinated faculty recruiting program could coordinate hires across faculties to build critical mass in areas identified as ripe for impact. For instance, a coordinated faculty recruiting program might focus on building strength in Indigenous scholarship. As another example, a postdoctoral fellowship program could provide opportunities University-wide for supporting post-doctoral fellow salaries and research support with a focus on interdisciplinary research. A doctoral fellowship program could further support the recruitment and retention of the strong doctoral students.

**STRATEGIES** Investments in early career researchers at UBC are investments in Strategy 1 (Great  
**1 & 8** People), Strategy 8 (Student Research) and contribute directly to the Research Excellence at UBC through the Collaboration Theme.

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### Provide Sustainable Shared Infrastructure (Strategy 7: Research Support)

UBC has procured over \$300M of infrastructure, including equipment, over the last five years. Keeping this infrastructure operational as long as economically feasible and enabling sharing between investigators is key to providing an environment capable of enabling world-class research in many areas.

By investing in shared infrastructure through sustainable models that involve the institution, the researchers and the faculties, UBC can continue to build and provide the high-quality environment necessary for conducting world-class research and attracting world-class talent. There are multiple potential avenues for

UBC to invest in sustainable shared infrastructure. For instance, UBC could target a small number (7-10) of facilities to support through cost sharing with researchers and faculties and further develop the models that are being piloted through the VPRI's Shared Infrastructure program. UBC could also consider investing in technical services, such as data analytics, that crosscut multiple research areas but that are unlikely to be funded federally or provincially.

## **STRATEGY**

**7**

Investments in shared infrastructure support Strategy 7 (Research Support).

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### **Recognize and Support Globally Excellent Research Areas (Strategy 7: Research Support)**

By developing approaches to recognize and support globally excellent research areas, UBC could better showcase its research strength to the world, attracting more support and the highest-quality talent. One such mechanism could be through processes to nurture Globally Research Excellent Institutes (GREx) and extend the concept to the Okanagan campus. Support provided could include matching and catalytic funds, global partnership development and enhanced communication support. This additional support could help an institute to establish international partnerships, enhance collaborations and attract sustainable funding, enhancing the research environment for the institute's faculty, staff and students. High-profile institutes can play a critical role enhancing the reputation, both locally and globally, of UBC.

Mechanisms to recognize and support research areas that are not appropriate for an institute also require consideration and discussion.

## **STRATEGY**

**7**

Investments in an institute model support Strategy 7 (Research Support).

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### **Increase Collaboration between Campuses (Strategy 3: Thriving Communities)**

UBC has two main distinctive, yet complementary campuses: UBC Okanagan and UBC Vancouver. The distance between the two campuses can make starting and sustaining collaborations and accessing infrastructure challenging. UBC can enhance intellectual opportunities, enable increased collaborations, attract additional funding and create new opportunities for research areas by creating programs to increase interactions between the campuses. Collaboration Research Mobility Awards initiated in the last year have enabled students from UBC Okanagan to use equipment at UBC Vancouver, helped to strengthen 22 existing cross-campus collaborations and supported the creation of over 48 new collaborative relationships. Other potential directions to enhance collaboration to enable faculty from each campus to visit the other for longer periods of time to enable engagement in research and learning opportunities at the other campus. Increased opportunities for interaction and collaboration between campuses would leverage resources available across UBC and enable cutting edge scholarship throughout the system. Bi-campus collaborations have the potential to amplify investments in early career researchers and shared infrastructure and support development of emerging and established research areas.

## **STRATEGY**

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Investments to increase collaboration between campuses are investments in Strategy 3 (Thriving Communities) and all strategies related to Research Excellence.

## Summary

UBC is amongst the top 20 public research-intensive universities in the world, attracts the second largest amount of research funding in Canada and often places first in federal granting competitions. The research conducted at UBC creates new works of art, provides new insights into literature and historical events, develops new technologies and enables new approaches to health and wellness, to name just a few areas in which UBC research impacts British Columbians as well as global citizens. UBC research also provides significant economic benefits to BC and enables a richer teaching and learning environment.

This document has considered strengths, weaknesses, and threats that apply to UBC research system-wide. It has also outlined potential large areas of investment (>\$5M annual). In addition to these large opportunities, there are many ways in which UBC’s research environment is being improved. Appendix A outlines current initiatives. Ideas for areas in which additional investment would have significant effect for researchers are welcome at <https://research.ubc.ca/research-at-ubc>.

It is the community of excellent scholars and researchers—faculty, staff, post-doctoral fellows and students—who make UBC research world-leading. UBC’s research trajectory is strong because of the great people who contribute to UBC research every day.

Strengths	Weaknesses
<p>Broad and deep community of world-class researchers</p> <p>World-class strengths in many subject areas</p> <p>Growing strength in interdisciplinary approaches</p> <p>World-class facilities and infrastructure in many areas<sup>7</sup></p>	<p>Attracting top doctoral students and postdoctoral fellows</p> <p>Sustaining research infrastructure</p> <p>Recognition of demonstrated research excellence</p> <p>Support and recognition of community-engaged research</p> <p>Support for award nominations</p>
Opportunities (>\$5M annual)	Threats
<p>Increase number of early career researchers (Strategy 1: Great People and Strategy 8: Student Research)</p> <p>Provide sustainable shared infrastructure (Strategy 7: Research Support)</p> <p>Recognize and support globally excellent research areas (Strategy 7: Research Support)</p> <p>Increase collaboration between campuses (Strategy 3: Thriving communities)</p>	<p>Impact of cost of living on recruiting and retaining excellent people</p> <p>Low provincial research funding</p>

<sup>7</sup> UBCO is at an earlier stage of infrastructure and facility development than UBCV where more world-class infrastructure and facilities exist.

## Appendix A: Current Initiatives to Improve the Research Environment

This document has outlined a number of weaknesses that limit UBC research from reaching its full potential. A number of initiatives and pilots are underway to address these weaknesses. These initiatives and pilots are summarized below according to the strategy from Shaping UBC's Next Century that they support. Assessment of these initiatives and pilots are ongoing. Based on assessments, pilots and initiatives aiding the UBC research environment will be developed into ongoing programs; efforts that are not yielding benefits will be ceased. It is expected that additional pilots and initiatives will be developed through engagement with the UBC research community.

### Strategy 6: Collaborative Clusters

There is a growing trend in research funding to enable interdisciplinary approaches to challenging problems.

**Research Clusters.** The *Research Excellence Clusters* (Vancouver) and *Eminence programs* (Okanagan) aim to help researchers form and nurture interdisciplinary teams that can be used as a basis to attract new funding, form partnerships and solve key societal challenges that transcend the traditional boundaries associated with departments, institutions and funding agencies.<sup>8</sup> For each of these programs, faculty submit proposals that are peer-reviewed to determine which clusters receive funding. The faculty-led determination of team formation distinguishes UBC from peer institutions. Early feedback on these programs demonstrates a number of positive benefits including increased collaboration, leveraged funding, increased research outputs, improved morale and purpose, new curriculum, opportunities for students and external recognition.

**Humanities Hub.** To support and promote research excellence in the humanities in a way that recognizes distinct models of scholarship, publication and collaboration, a *Public Humanities Hub* is in development. This hub will foster collaboration and research excellence amongst UBC humanists across both campuses and will highlight and develop public-facing research in the humanities. This hub will launch in 2019.

**Collaborative Research Mobility Awards.** These awards help build or strengthen collaborative research partnerships by enabling researchers to move between campuses or institutions.<sup>9</sup> Two competitions have been held: one targeted at movement between UBC's two campuses and the other between UBC and the University of Washington. Early indications suggest that awards have helped researchers build new networks, generate new research directions and are enabling additional funding opportunities.

### Strategy 7: Research Support

**Advanced Research Computing (ARC).** The Advanced Research Computing (ARC) group, formed four years ago, provides consultation and expertise to support UBC researchers in accessing national computational resources.<sup>10</sup> UBC is in the process of installing computational and storage resources at UBC for use by UBC researchers to fill a gap in the availability of national resources. These resources are expected to be on-line by late spring 2019 and will be available system-wide.

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<sup>8</sup> <https://research.ubc.ca/about-vpri/research-excellence-clusters>

<sup>9</sup> <https://research.ubc.ca/collaborative-research-mobility-awards>

<sup>10</sup> <https://arc.ubc.ca/>

**Shared Infrastructure Models.** Shared infrastructure models are being trialed on the Vancouver campus for sequencing and bioinformatics, cryo-TEM and (soon) plant care that aim to build a sustainable model for the provision, operation and maintenance of infrastructure for the UBC research community.<sup>11</sup> These models involve an academic-led steering committee with central support used to bootstrap models intended to become sustainable through researcher and faculty investments.

**Research Facility Support Grants.** Two competitions (Vancouver campus) has been run to award operations and maintenance support for infrastructure obtained using federal funds that is used by multiple investigators and for which federal operations and maintenance support is ending.<sup>12</sup>

## Strategy 8: Student Research

**Program for Undergraduate Research.** A call for innovative pilot projects to broaden access to, and enhance, undergraduate research experiences<sup>13</sup> is currently underway at both campuses.

## Strategy 9: Knowledge Exchange

**Innovation UBC.** There are many ways for UBC research to result in socio-economic impact. UBC is building support for four pathways: commercialization, entrepreneurship, knowledge exchange and partnership development. To ensure that the support can be easily accessed by both the internal and external communities, innovation UBC hubs have been created at UBC Robson Square (downtown Vancouver) and the Okanagan Accelerator Centres (downtown Kelowna).<sup>14</sup>

## Strategy 10: Research Culture

**Indigenous Research Support Initiative.** This initiative helps UBC researchers and Indigenous partners form collaborative projects based on community-led interests.<sup>15</sup>

**Community University Engagement Support (CUES) Fund.** The VP External and VP Research and Innovation portfolios are aiming to continue the community university engagement support fund (CUES) to support community partners in engaging with UBC, including for research projects of joint interest.<sup>16</sup>

**Research Integrity Training Framework.** The VPRI and Faculty of Graduate and Postdoctoral Studies will produce new educational and communications material about the responsible conduct of research to ensure members of the UBC research community have access to appropriate materials.

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<sup>11</sup> For example, <https://sequencing.ubc.ca/>

<sup>12</sup> <https://research.ubc.ca/about-vpri/initiatives/research-facility-support-grants>

<sup>13</sup> <https://research.ubc.ca/about-vpri/program-undergraduate-research-experience-call-proposals>

<sup>14</sup> <https://innovation.ubc.ca/>

<sup>15</sup> <https://research.ubc.ca/about-vpri/indigenous-research-support-initiative>

<sup>16</sup> <http://communityengagement.ubc.ca/scholarly-resources/cues/>