



SUBJECT	REPORT ON UBC’S RESEARCH EXCELLENCE CLUSTER PROGRAM
MEETING DATE	JUNE 13, 2019

Forwarded on the Recommendation of the President

APPROVED FOR SUBMISSION

Santa J. Ono, President and Vice-Chancellor

FOR INFORMATION

Report Date	May 15, 2019
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EXECUTIVE SUMMARY

UBC’s Research Excellence Clusters pilot program furthers specific strategies from *Shaping UBC’s Next Century*, including enabling interdisciplinary clusters of research excellence in pursuit of societal impact (Strategy 6), improving the ecosystem that supports the translation of research into action (Strategy 9), fostering a strong and diverse research culture (Strategy 10), deepening the relevance and public impact of UBC research and education (Strategy 16), and building and sustaining strategic global networks that enhance impact (Strategy 19).

There are two pilot programs in progress at UBC. At UBC Vancouver, the Grants for Catalyzing Research Excellence Clusters (GCRC) program was jointly created by the Vice-President Research & Innovation and the Provost and Vice-President Academic to provide support for catalytic activities that enable the development of emerging clusters of research excellence into Global Research Excellence (GREx) clusters. The Vice-Principal Research (VPR) at UBC Okanagan established the Eminence competition to support the development of Research Excellence Clusters on that campus.

To date, four GCRC competitions have been held and a total of 81 clusters, totalling \$8,698,114 have been awarded. To date, two Eminence competitions have been held and a total of 11 clusters are currently funded, with a total of \$1,734,350 expended to date.

The purpose of this report is to provide an overview of the current state following the review of the program at UBC Vancouver.

Attachments

1. Report on UBC’s Research Excellence Cluster Program

STRATEGIC CORE AREAS SUPPORTED

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

DESCRIPTION & RATIONALE

It is now widely recognized that the solutions to the world's most pressing complex problems require researchers to collaborate across disciplines, institutions, sectors and geographic boundaries. Researchers are increasingly conducting interdisciplinary and multidisciplinary research and there is an attendant trend for federal sponsors to target large-scale funding competitions to support this type of team-based research. In response, UBC has been running pilot programs at each campus to help enable and increase interdisciplinary and team-based research efforts.

BENEFITS

Learning, Research,
Financial,
Sustainability &
Reputational

The Research Excellence Cluster program is designed to help researchers form and nurture interdisciplinary teams that can be used as a basis to form partnerships and collaborations, develop new direction/themes in research creation and address key societal and cultural problems and challenges that transcend the traditional boundaries associated with departments, institutions and funding agencies.

Gail C. Murphy

Vice-President, Research & Innovation



Report on UBC’s Research Excellence Clusters Program

Overview of Program

UBC’s Research Excellence Clusters pilot program furthers specific strategies from Shaping UBC’s Next Century Plan including enabling interdisciplinary clusters of research excellence in pursuit of societal impact (Strategy 6), improving the ecosystem that supports the translation of research into action (Strategy 9), fostering a strong and diverse research culture (Strategy 10), deepening the relevance and public impact of UBC research and education (Strategy 16), and building and sustaining strategic global networks that enhance impact (Strategy 19).

It is now widely recognized that the solutions to the world’s most pressing complex problems require researchers to collaborate across disciplines, institutions, sectors and geographic boundaries. Researchers are increasingly conducting interdisciplinary and multidisciplinary research and there is an attendant trend for federal sponsors to target large-scale funding competitions to support this type of team-based research. In response, UBC has been running pilot programs at each campus to help enable and increase interdisciplinary and team-based research efforts.

UBC-Vancouver

On the Vancouver campus, the Grants for Catalyzing Research Excellence Clusters (GCRC) program was jointly created by the Vice-President Research & Innovation and the Provost & Vice-President Academic to provide support for catalytic activities that enable the development of emerging clusters of research excellence into Global Research Excellence (GREx) clusters (see figure below).

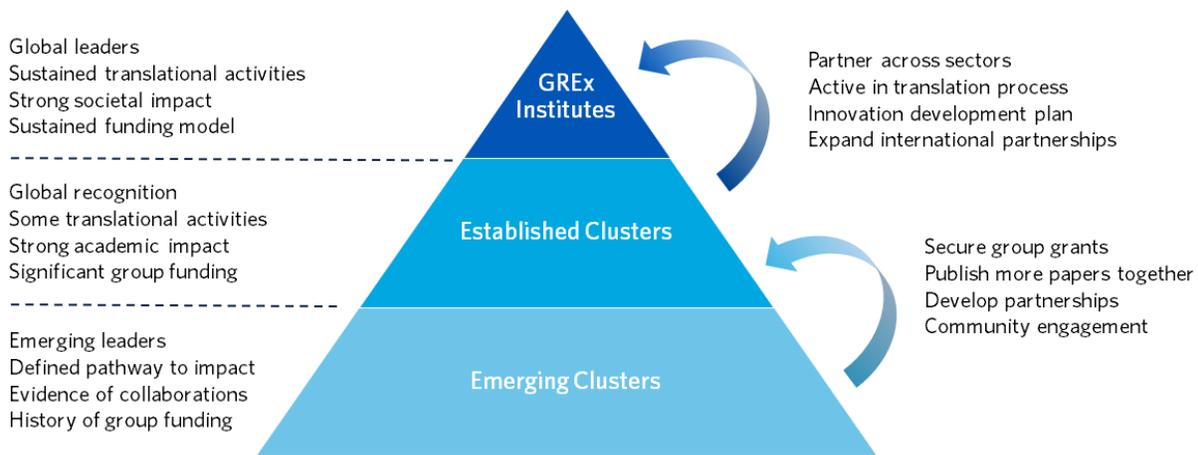


Figure 1. Pathway to GREx Institutes

The objectives of the GCRC program are to help researchers form and nurture interdisciplinary teams that can be used as a basis to form partnerships and collaborations, develop new direction/themes in research creation and address key societal and cultural problems and challenges that transcend the traditional boundaries associated with departments, institutions and funding agencies. Unlike typical operating grants which support the direct costs of conducting research, the GCRC awards support activities that help to create and catalyze clusters of research excellence (e.g. team meetings, workshops, knowledge exchange events and funding proposal development). Emerging clusters are eligible for a maximum of \$100,000 over 1 year and established clusters are eligible for a maximum of \$200,000 over 1 year. At the time of application, clusters self-categorize as either established or



emerging depending on multiple factors relating to their developmental stage and funding requirements. Faculty from all disciplines are invited to submit proposals to an open competition and funding decisions are determined through a process of peer review facilitated by the Vice-President Research and Innovation Office. Funded clusters are eligible to apply to subsequent competitions.

To date, four GCRC competitions have been held and a total of 81 clusters, totalling \$8,698,114 have been awarded.

Competition	Year	Disciplines	Applications	Awards	Total \$
CFREF Task Force ¹	2016	STEM & Health (federal priorities)	108	14	\$1,242,000
GCRC	2016	Social Sciences, Humanities, Creative & Performing Arts	39	11	\$458,000
GCRC	2017	All Disciplines	87	29	\$3,537,500
GCRC	2018	All Disciplines	84	27	\$3,460,614
			318	81	\$8,698,114

Table 1. UBC Vancouver GCRC Competitions - Summary

The clusters use an array of interdisciplinary approaches to tackle a diverse range of topics from international migration through to advanced materials manufacturing. For instance, the UBC Interdisciplinary Research-Based Theatre collaborative is an emerging cluster that uses drama to make research findings in areas such as new approaches to providing clean water in indigenous communities more accessible. As another example, the established Biodiversity Research Cluster is working to generate solutions to mitigate the global impacts of human activity on biodiversity.

Currently 27 Research Excellence Clusters (17 emerging and 10 established) are funded on the Vancouver campus (see table below).

UBC Vancouver Currently Funded Clusters (n=27)

Health Review Panel (n=11)
Action on Sepsis
Airway Centre
BC Diabetes Research Network
BCREGMED: Cellular and Regenerative Therapies through Collaborative, Innovative Science
Biomedical Imaging and Artificial Intelligence
Dynamic Brain Circuits in Health and Disease Research Excellence Cluster
Gynecologic Cancer Initiative
Harnessing the Social Exposome to Reduce Inequalities in Child Health and Development in Canada
Origins of Balance Deficits and Falls
Transformative Health and Justice Research Cluster
Women's Health Research Cluster

¹ Initial cluster funds were awarded through an internal, peer reviewed competition that was conducted to identify proposals for the Canada First Research Excellence Fund.



STEM Review Panel (n=9)
Advanced Materials Manufacturing
Bee Health
Biodiversity Research: An Emerging Global Research Priority
Bionics Network
Blockchain@UBC
Designing for People (DFP)
Diversified Agroecosystem Cluster
Marine Systems Research Cluster
Quantum Computing Research Cluster
SSH and Performing & Creative Arts Review Panel (n=7)
Big Data and Computational Social Science Research Cluster
Critical+Creative Social Justice Studies-The Global Condition Working Group
Language Sciences Initiative
Migration
Present histories: Interdisciplinary and contemporary engagements with the past
UBC Interdisciplinary Research-Based Theatre Collaborative
Wingspan: Dis/ability Arts, Culture & Public Pedagogy

Table 2. Currently Funded UBC Vancouver Clusters

UBC-Okanagan

The UBC Okanagan Vice-Principal Research (VPR) established the Eminence competition to support the development of clusters of research excellence at UBC Okanagan. Funding is flexible and operating costs are eligible. Clusters may request funding ranging from \$20,000 to \$200,000 per year and are funded for three years with annual funding conditional on progress.

For the purposes of this funding competition, a cluster of research excellence is defined as an interdisciplinary network of researchers focused on addressing key challenges facing society. Each cluster of research excellence is comprised of an interdisciplinary cohort of scholars who are leaders in their respective areas of expertise who are working together on complex issues. Clusters are expected to perform high-impact work that transcends traditional departmental or institutional boundaries, mobilizes new knowledge, and allows UBC to address societal issues. The goals of the Eminence program are to:

- Contribute to and leverage existing and emerging research strengths that are aligned with the strategic plans of the units, faculties, campus and university and will lead to provincially recognized centres of research excellence
- Encourage new collaborative and interdisciplinary research and/or artistic creation initiatives that address key questions facing society
- Support the recruitment and training of students at all levels and other highly qualified personnel
- Foster new knowledge and enable knowledge transfer with business, governmental and community partners that will have a transformative impact on UBC and on society
- Increase external research funding
- Enhance UBC’s academic reputation and attract new faculty and trainees
- Support UBC’s commitment to respectful engagement with Indigenous and local communities and to equity, diversity and inclusion



To date, two Eminence competitions have been held and a total of 11 clusters are currently funded, with a total of \$1,734,350 expended to date. This competition runs annually and at steady state, will have ~15 clusters supported.

Competition	Year	Disciplines	Applications	Awards	Total \$
Eminence	2017	All	13	5	\$1,072,000
Eminence	2018	All	23	6	\$662,350
			36	11	\$1,734,350

Table 3. UBC Okanagan Eminence Competitions - Summary

UBC Okanagan Currently Funded Clusters (n=11)

Funded in 2018 (n=6)
Cluster of Research Excellence in Agricultural Technologies and Bioproducts
Cluster of Research Excellence in Biocomposites
Cluster of Research Excellence in Culture, Creativity, Health and Wellbeing
Cluster of Research Excellence in Enhancing Ecosystem Sustainability
Cluster of Research Excellence in Indigenous Led Impact Assessment
Cluster of Research Excellence in Wine and Grapes
Funded in 2017 (n=5)
Cluster of Research Excellence in Community Health
Cluster of Research Excellence in Exosome Isolation
Cluster of Research Excellence in Green Infrastructure
Cluster of Research Excellence in Medical Physics and Data Analytics
Cluster of Research Excellence in Neurobiology

Table 4. Currently Funded UBC Okanagan Clusters

Cluster Accomplishments to Date

While this program is still in its early stages, the clusters are already reporting impressive accomplishments.

UBC-Vancouver

The GCRC program has resulted in new academic partnerships across faculties and external institutions as well as new partnerships with industry and non-profits such as Honda, STEMCELL Technologies, Lululemon Athletica, Allen Institute for Brain Science, Boehringer-Ingelheim and the Vancouver School Board. In addition to generating new lines of research, methodological approaches, and creative performances, the cluster funding has strengthened UBC's engagement in policy discussions and public discourse. For instance, the Migration Cluster hosted a symposium with the Immigrant Employment Council of BC, Immigration Policy and Integration Branch, BC Government, the UN Refugee Agency, Mayor's Working Group on Immigration and the City of Vancouver. The clusters were also able to attract a total of \$63M in external funding from sources such as the Networks of Centres of Excellence (\$18.5M to NanoMedicines Innovation Network), the German Aerospace Research Institute (\$500k to Advanced Manufacturing), SSHRC Partnership Grants (\$2.5M to the Hidden Costs of Global Supply Chains Cluster and Implicit Gender Bias in STEM) and the Canadian Foundation for Innovation (\$27M to the Bioproducts Institute).



UBC-Okanagan

The 2017-2020 cohort of Eminence funded clusters reported recruitment of 16 HQP, a new partnership with Okanagan College, several workshops with industry, a successful bid to host a national conference, a new cluster website, several co-authored papers and presentations, cross-training and co-supervision of students, and leveraged funding from NSERC, Mitacs, BC Cancer Foundation and SSHRC.

GCRC Mid-Point Review Process

In March-April 2019, the Vice-President Research and Innovation Office (VPRIO) conducted a mid-point review of the GCRC program (Vancouver campus) to solicit input on key aspects of the pilot program. Feedback was collected through a series of in-person feedback forums as well as an online survey (Appendix A for complete list of questions).

The VPRIO retained Q Workshops Inc., an external independent facilitator, to conduct the feedback forums. Feedback from individuals with knowledge of the program was sought in order to determine strategies for improving the pilot program. A request to participate was sent to over 200 faculty involved with the research clusters. Faculty leads of all currently and previously funded clusters and the principal applicants on all unfunded GCRC applications were invited by email to participate in an in-person, 75-minute feedback forum on the UBC Point Grey campus. A total of six feedback forums were conducted. Two forums were held for unfunded applicants and four forums were held for current and previously funded clusters. A total of 45 people participated in the forums. Feedback at the forums was collected using anonymous opinion meters and through open discussion. Forum discussions were graphically recorded and notes were recorded to capture general themes but not for attribution.

The survey was completed by 65 respondents: 36 respondents were associated with a funded cluster, 17 respondents were associated with an unfunded cluster, 10 were involved with both funded and unfunded clusters, and 2 identified as other.

Mid-Point Review Findings

The online survey and feedback forums solicited input on three key areas: GCRC's strategic value for UBC; ability of the GCRC to meet its objectives; and the GCRC application and review processes.

1. GCRC's Strategic Value

There was consensus amongst survey respondents and forum participants that the GCRC program is an important strategic priority for UBC. Indeed, many of the forum participants and survey respondents made comments urging UBC to continue this unique program.

Forum participants and survey respondents were asked to rank the strategic priority of the GCRC program for UBC². 88% indicated that they think the GCRC is a very important or important strategic priority. In addition, forum participants and survey respondents involved with clusters, including those that were not currently funded, were also asked to rank the value of the GCRC program for the growth

² Ratings were indicated as very important, important, moderately important, slightly important, or not important.



of their cluster³. 81% responded that the GCRC was valuable or extremely valuable to their cluster's growth.

2. Program Objectives

Forum participants and survey respondents were asked to rate how well they thought the GCRC program is meeting (or ultimately will meet) key program objectives (see table below).

Program Objective	Exceeds	Fully Satisfies	Mostly Satisfies	Partially Satisfies	Does Not Satisfy
Addressing complex and key questions facing society	17.7%	31.0%	31.0%	17.7%	2.7%
Creating opportunities to develop novel research approaches/questions/directions	22.2%	30.6%	30.6%	13.9%	2.8%
Engaging communities	9.3%	31.5%	31.5%	25.9%	1.9%
Establishing greater collaboration and partnerships	22.6%	33.0%	27.0%	11.3%	6.1%
Global leadership and developing international partnerships	10.7%	25.9%	31.3%	22.3%	9.8%
Helping to achieve excellence in research / artistic creation	13.1%	36.4%	25.2%	17.8%	7.5%
Securing and leveraging additional funding	7.4%	25.9%	41.7%	19.4%	5.6%
Supporting equity, diversity and inclusion in research activities and on teams	10.3%	34.6%	28.0%	20.6%	6.5%
Supporting interdisciplinary, inter-institutional, and inter-sectoral collaborative research	23.1%	38.9%	23.1%	12.0%	2.8%
Supporting training efforts and mentorship	8.3%	36.1%	24.1%	19.4%	12.0%

Table 5. Responses to Program Objectives Questions

There was agreement amongst the majority of the survey respondents and forum participants, including those who were not funded, that the GCRC program is (or will) meet its objectives⁴. While some questions were raised about the ability of the GCRC to support community engagement, global leadership and international partnerships, these doubts were tied to concerns around the limitations of the 1-year grant term. For instance, forum participants commented that the clusters were given insufficient time to initiate and develop meaningful international partnerships. Similarly, while many forum participants highlighted novel strategies for incorporating students and trainees into their clusters, both survey respondents and forum participants felt that the GCRC expense eligibility criteria could be refined to enhance research training and mentorship opportunities.

³ Ratings were indicated as extremely valuable, valuable, fairly valuable, slightly valuable or not valuable.

⁴ More than 60% of survey respondents and 75% of forum participants indicated that they thought the GCRC program was exceeding, fully or mostly satisfying all of the stated objectives.



3. Application and Review Processes

Forum participants and survey respondents were asked to rate key areas⁵ of the GCRC process including: the clarity and format of the proposal guidelines and assessment criteria, the funding amount (\$100,000 for emerging and \$200,000 for established), supports provided by the VPRI, expense eligibility, the review process, and the 1-year funding term.

While high ratings were given to several aspects of the process, the majority of survey respondents and survey participants rated the 1 year of funding as poor or fair. Reflecting this ranking, most of the survey responses to the question “what more might be done to enhance the grant process and support clusters?” focused on limitations of the 1-year grant term which is, in general, perceived as insufficient for achieving the clusters’ objectives. Forum participants further supported that the 1-year grant term was challenging for a variety of reasons including staff retention, establishing community connections, securing external funding, and scheduling events with high profile visitors.

The ratings for the review process and expense eligibility were more mixed. Nearly 25% of forum participants and 15% of survey respondents rated expense eligibility as poor or fair. The review process was similarly rated as poor or fair by 15% of survey respondents and by 24% of the forum participants. With respect to the review process, survey respondents and forum participants indicated that there seemed to be a disconnect between the application requirements and the reviewers’ comments and expectations. They suggested that reviewers required additional guidance and that some criteria, most notably, equity, diversity and inclusion considerations, needed clarification. In addition, several of the leads of previously funded clusters were not clear why their cluster funding was not renewed when they had met or exceeded their outcomes. They suggested that reviewers required additional guidance for evaluating the cluster outcome metrics. In terms of expense eligibility, some survey respondents and forum participants recommended that clusters be permitted to dedicate a small portion of their funds to direct research expenses to hire graduate students to enable better research training/mentoring experiences and collaborative pilot work.

Future Plans

UBC-Vancouver:

- Extend the term for GCRC grants from 1 to 2 years to enable clusters sufficient time to achieve their ambitious objectives
- Modify GCRC expense eligibility criteria to allow clusters to dedicate a small portion of their funding (up to 10%) to provide salary to trainees, students and highly qualified personnel
- Continue to refine and improve the GCRC proposal guidelines, assessment criteria and robustness of the peer review process including training and resources for applicants and reviewers to support commitments to equity, diversity and inclusion.

UBC-Okanagan:

- Development of new EDI resources and guidelines to support applicants and reviewers
- Cultural competency training – a pilot program has been funded through the Equity & Inclusion Office; workshops are being developed and will be offered to some of the Eminence teams in Fall 2019
- Revise guidelines to clarify formatting, team composition (including capping the number of clusters and individual can lead or participate in) and eligibility of expenses

⁵ Ratings were indicated as excellent, good, average, fair, poor or n/a.



Appendix A - Questions

1. How would you rate the clarity and format of the proposal guidelines and assessment criteria?
2. How would you rate the supports that were offered (e.g. SPARC Test your Concept Workshop, GCRC information sessions, website)?
3. How would you rate the review process?
4. How would you rate the following funding features of the GCRC program:
 - a. 1 year of funding
 - b. Amount of funding
 - c. Expense eligibility
5. How well do you think the GCRC is satisfying (or ultimately will satisfy) the following objectives?
 - a. Establishing greater collaboration and partnerships
 - b. Securing and leveraging additional funding
 - c. Creating opportunities to develop novel research approaches/questions/directions
 - d. Addressing complex and key questions facing society
 - e. Engaging communities
 - f. Global leadership and developing international partnerships
 - g. Helping to achieve excellence in research / artistic creation
 - h. Supporting training efforts and mentorship
 - i. Supporting interdisciplinary, inter-institutional, and inter-sectoral collaborative research
 - j. Supporting equity, diversity and inclusion in research activities and on teams
6. What more might be done to enhance the grant process and support clusters?
7. What more might be done to enhance the grant process and support developing clusters?
8. Overall, how would you rank the value and impact of the GCRC program for the growth of your cluster?
9. UBC has allocated \$3 million to GCRC. How would you rank this strategic priority for UBC?
10. Do you have any other comments related to the GCRC program?