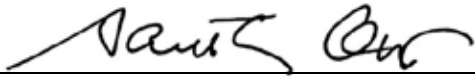


<b>SUBJECT</b>	<b>RESEARCH EXCELLENCE CLUSTERS UPDATE</b>
<b>MEETING DATE</b>	<b>SEPTEMBER 24, 2019</b>

Forwarded on the Recommendation of the President

**APPROVED FOR SUBMISSION**

  
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 Santa J. Ono, President and Vice-Chancellor

**FOR INFORMATION**

<b>Report Date</b>	August 20, 2019
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**Presented By** Gail Murphy, Vice-President Research & Innovation  
 Andrew Szeri, Provost and Vice-President Academic, UBC Vancouver

**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).

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

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

The purpose of this report is to provide an initial analysis of the involvement of hundreds of UBC researchers across all career stages and across multiple disciplines in the UBCV Grants for Catalyzing Research Clusters (GCRC) initiative.

**Attached:** Report on UBC’s Research Excellence Cluster Program: Cluster Composition

**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** 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.



## UBC-Vancouver’s Research Excellence Clusters Program: Cluster Composition

The purpose of this report is to provide an initial analysis of the involvement of UBC researchers across all career stages and across multiple disciplines in the UBC-V Grants for Catalyzing Research Clusters (GCRC) initiative. This program enables UBC researchers to pursue novel research directions, themes and questions.

### Overview of the GCRC 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).

On the Vancouver Campus, the GCRC program was jointly created by the Vice-President Research & Innovation (VPRI) and the Provost & Vice-President Academic (Vancouver) to provide support for catalytic activities to enable the development of emerging clusters and to foster the growth of established clusters of research excellence. The objectives of the GCRC are to help researchers form and nurture interdisciplinary teams that facilitate partnerships and collaborations, develop new questions and new directions/themes in research creation, and address key societal and cultural challenges that transcend the traditional boundaries associated with departments, institutions and funding agencies.

Faculty from all disciplines are invited to submit proposals to an open competition and funding decisions are determined through a process of rigorous peer review facilitated by the VPRI Office. At the time of submission, applicants select one of three panels to review their proposals: Health, STEM, or Social Sciences, Humanities, and Creative & Performing Arts. The three interdisciplinary review panels are composed of external experts, UBC faculty and staff and adjudications take place in person. The adjudication process adheres to best practices including the declaration of any conflicts of interest and the recusing of panel members as appropriate, and voting on consensus scores by secret ballot. All review panel discussions and ranked lists are considered confidential.

**Table 1** describes the four GCRC competitions that have been held. Successful clusters have one year to spend awarded funds on non-direct costs of research, such as workshops, coordination activities and grant writing. To give a sense of the diversity of topics that have been funded, Appendix 1 provides a description of the clusters funded over the last two competition years.

**Table 1 Summary of UBCV GCRC Competitions**

Competition	Year	Disciplines	Applications	Awards	Total \$
CFREF Task Force <sup>1</sup>	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
					\$8,698,114

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

## The Composition of Clusters

To gain insight into the composition of membership of clusters, we consider data from the last two years for which competitions were held across all disciplines. Across the 171 applications received for these two GCRC competitions, 49 (~30%) were led by early to mid-career faculty (defined by rank as assistant or associate professor) and 54 (32%) were led by women. Of the 56 funded clusters (full list provided in Appendix 1) over the last two years, 11 (20%) were led by assistant or associate professors and 21 (38%) were led by women. The GCRC competition requires the identification of a sole lead (PI) to enable administration of funding; in reality, a cluster may be effectively led by multiple researchers, thus these numbers would be under-representing diversity in leadership.

The purpose of a cluster is to bring multiple researchers together to work collaboratively. Funded clusters typically comprise 10-100+ confirmed members, including faculty, students, staff and external collaborators. To date, our reporting methods have been limited in capturing information about participants from a diversity perspective. As part of efforts to support and improve inclusion in research, VPRI is working with Equity and Inclusion to improve data collection efforts, which will allow tracking of the diversity of involvement in GCRC funded clusters over time.

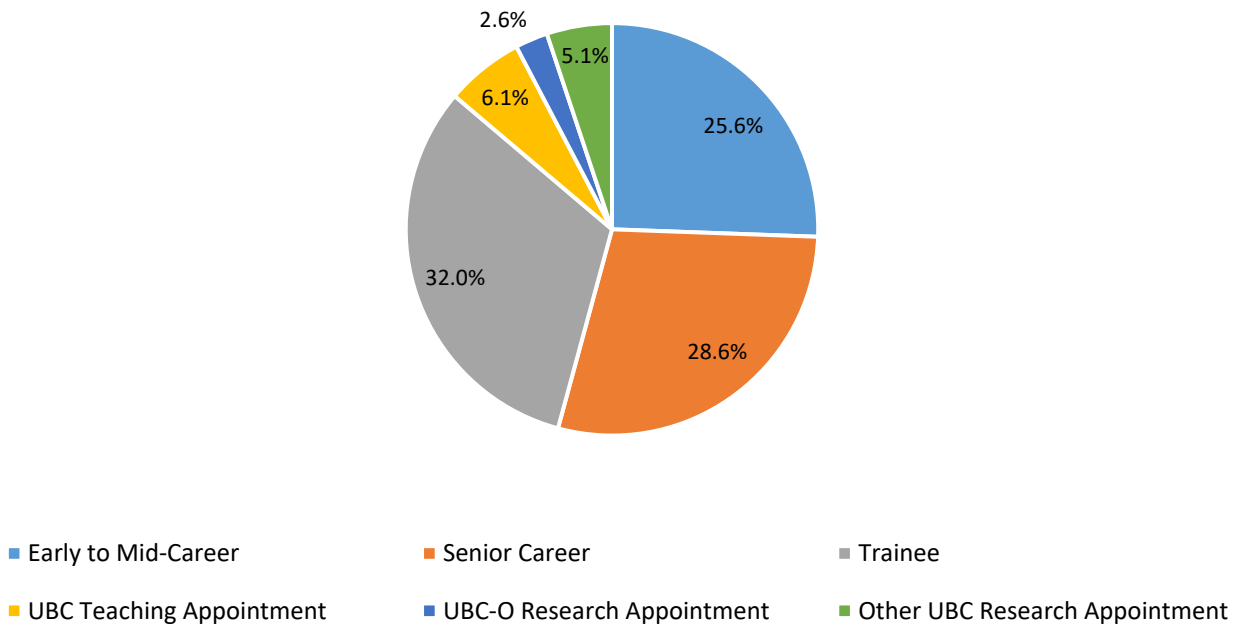
To give initial insight into diversity of membership in funded clusters, we provide an analysis of six currently funded clusters that represent a range of established and emerging clusters from the Social Sciences, Humanities, Health, STEM, and Creative and Performing. These clusters are: 1) Migration, 2) Interdisciplinary Theatre-Based Research Collective, 3) Diversified Agroecosystems, 4) Origins of Balance Deficits and Falls, 5) Biodiversity Research, 6) Language Sciences Initiative.

**Table 2** shows the range of UBC participants in the six clusters with respect to career stage, gender, and campus location.

**Table 2 Composition of Six Currently Funded Clusters (~400 UBC members)**

Cluster Name	Type	Total UBC Members	Women	Early to Mid-Career Faculty	UBC-O
Migration	Emerging/ Humanities	11	8	6	0
Theatre	Emerging/ Performing Arts	21	12	5	1
Diversified Agro	Established/ Social Sciences STEM	23	9	6	0
Balance & Falls	Emerging/ Health	24	7	5	2
Biodiversity	Established/ STEM	140	54	26	6
Language Sciences Initiative	Established/ Social Sciences	172	110	52	5

**Figure 1** shows the relative proportions of UBC cluster members' career stages across the six clusters. By encouraging participation across all career stages, the GCRC program strives to increase research excellence and innovation. Early-career faculty in particular can benefit by being co-investigators on group grants and through mentoring and interactions with more senior faculty from beyond their home department(s).



### Actions to Further Increase Inclusion

To advance UBC's overarching institutional commitment to Inclusive Excellence, equity, diversity and inclusion (EDI) considerations are being incorporated into all aspects of the GCRC program including application requirements, proposal evaluation criteria, review panel composition, and end of grant reporting. Beginning in the 2018 competition, GCRC proposals were evaluated on the extent to which they demonstrate a commitment to EDI through cluster membership and proposed activities. In April 2019, the 27 currently funded clusters were invited to a half-day session dedicated to EDI in research. Building on these efforts, for the 2019 competition, the VPRI has developed a "Resource Guide for Addressing EDI in GCRC Applications" (Appendix 2) and is collaborating with UBC's Office of Equity and Inclusion to provide an EDI focused workshop for GCRC applicants and a separate workshop for reviewers. In recruiting GCRC reviewers, the VPRI will seek representation from a diverse range of identities including faculty from historically, systematically and persistently marginalized groups as well as faculty and staff with EDI content expertise. Attention to Inclusive Excellence in the GCRC program leads to a better research environment and culture, and provides UBC researchers experience with criteria that are playing an increasingly important role in the awarding of federal tri-council funding.

## Appendix 1. Funded Clusters over the Last Two Competition Years (2018 & 2017)

Cluster Name	Description/Goals	Year(s)	Category
<b>Advanced Materials Manufacturing</b>	Making tomorrow's complex products safer, stronger and more sustainable using digital manufacturing and advanced simulations of materials.	2018 2017	Established Established
<b>BC Diabetes Research Network</b>	Strengthening diabetes research in BC from the lab bench to clinical trial across themes from cure-oriented diabetes research to diabetes prevention to diabetes complications.	2018 2017	Established Emerging
<b>BCREGMED</b>	Cellular and regenerative therapies through collaborative, innovative science.	2018 2017	Established Established
<b>Biodiversity Research: An Emerging Global Research Priority</b>	Identifying global change impacts on biodiversity and offering solutions to challenges associated with these changes.	2018 2017	Established Established
<b>Designing for People (DFP)</b>	Multidisciplinary approaches to human-centered research and design of interactive technologies	2018 2017	Established Established
<b>Diversified Agroecosystems Cluster</b>	Applying ecological and systems analysis perspectives for integrated research on sustainable food systems that can feed the world while cooling the planet, protecting biodiversity, and promoting food sovereignty.	2018 2017	Established Emerging
<b>Gynecologic Cancer Initiative</b>	Accelerating transformative research and translational practice on prevention, detection, treatment, and survivorship of reproductive cancers to reduce the incidence and mortality of these cancers by 50% in the next 15 years.	2018	Established
<b>Language Sciences Initiative</b>	Facilitating collaborations that advance our understanding of how language shapes our individual and collective human experience.	2018 2017	Established Established
<b>Airway Centre</b>	Addressing the growing burden of COPD and other airway conditions in BC and elsewhere by finding better diagnostics and therapies for patients.	2018 2017	Established Established
<b>Wingspan: Dis/ability Arts, Culture &amp; Public Pedagogy</b>	Using public pedagogies to ask: What do inclusion and accessibility mean to our schools and the dis/Deaf artists and the students who collaborate with them? What and how we can learn from the voices of students and artists with disabilities?	2018 2017	Established Emerging
<b>Action on Sepsis</b>	Delivering cutting-edge innovation in the prevention, diagnosis, and treatment of sepsis in British Columbia and around the world.	2018	Emerging
<b>Bee Health</b>	Exploring the honey bee's role as pollinator, producer, and biomonitor and how it is impacted by environmental exposures (both natural and human caused), with the common goal of improving the fate of the honey bee.	2018	Emerging
<b>Big Data and Computational Social Science Research Cluster</b>	Strengthening the research community working in this area by developing synergies and infrastructure to advance this scholarly field.	2018	Emerging
<b>Biomedical Imaging and Artificial Intelligence</b>	Developing a deeper understanding of how molecular, cellular and tissue structure and organization relate to normal and diseased tissue function to help alleviate pressures on healthcare	2018 2017	Emerging Emerging

Cluster Name	Description/Goals	Year(s)	Category
	systems by enabling effective personalized medicine.		
<b>Bionics Network</b>	Engaging with patients and industry specialists to generate assistive and medical products that offer measurable improvements in quality of life.	2018 2017	Emerging Emerging
<b>Blockchain at UBC</b>	Addressing some of the most significant challenges facing this rapidly emerging technology, including security, scalability, and records lifecycle management.	2018 2017	Emerging Emerging
<b>Critical+Creative Social Justice Studies-The Global Condition Working Group</b>	Using an anti-colonial and intersectional approach to develop a transformative approach that attends to current social and ecological conditions.	2018 2017	Emerging Emerging
<b>Dynamic Brain Circuits in Health and Disease Research Excellence Cluster</b>	Studying brain connections, including their dynamic changes during normal development and learning and how these connections become dysfunctional in neuropsychiatric disease.	2018 2017	Emerging Emerging
<b>Harnessing the Social Exposome to Reduce Inequalities in Child Health and Development in Canada</b>	Determining how children's social environments influence their physical and psychological exposures to impact their health and development.	2018	Emerging
<b>Marine Systems Research Cluster</b>	Reducing the environmental footprint and increasing the safety and situational awareness of both merchant and naval ships.	2018	Emerging
<b>Migration</b>	Examining the determinants and consequences of international migration with a focus on the legal governance of migration and refugee flows, immigrant and refugee integration, the nexus between migration and Indigeneity, and the relationship between immigration and national identity.	2018 2017	Emerging Emerging
<b>Origins of Balance Deficits and Falls</b>	Advancing our understanding of the mechanistic principles of healthy balance control and the mechanisms that underlie balance deficits and falls.	2018 2017	Emerging Emerging
<b>Interdisciplinary Histories Research Cluster</b>	Exploring both the forms of representation of the past, and their uses: how the past is excavated (literally and metaphorically) and expressed in relation to contemporary practices and concerns.	2018	Emerging
<b>Quantum Computing Research Cluster</b>	Discovering and creating the technology on which quantum computations will be run in the next two decades.	2018	Emerging
<b>Transformative Health and Justice Research Cluster</b>	Addressing the 'criminocentric' understanding of crime, rehabilitation, and recidivism, by creating a research and policy agenda to address health and justice inequities experienced by individuals impacted by the criminal justice system.	2018	Emerging
<b>UBC Interdisciplinary Research-Based Theatre Collaborative</b>	Employing creative means of knowledge exchange with stakeholders, communities, and other researchers.	2018 2017	Emerging Emerging
<b>Women's Health Research Cluster</b>	Providing the research and clinical communities with invaluable information that will make help make women healthier.	2018	Emerging

<b>Cluster Name</b>	<b>Description/Goals</b>	<b>Year(s)</b>	<b>Category</b>
<b>Bioproducts Research Cluster</b>	Accelerating the extraction of high value products like bio-materials, bio-energy and bio-chemicals from bio-based resources	2017	Established
<b>Data Analytics and Systems Science (DASS) to Optimize Heart + Lung Health</b>	Creating a system-wide, data-driven solution to harness the power of "omics" biomarkers in optimizing health and minimizing disease, and enhancing personalized diagnostic and therapeutic development for heart and lung diseases	2017	Established
<b>ForLives: Forests and Livelihoods for Sustainable Development</b>	Support of our vision of a world where local, forest-led sustainable development drives human prosperity in a manner which sustains and protects forests	2017	Established
<b>Microbiome Research Network: Exploring Microbial Interactions and Microbiome Function</b>	Changing our understanding of the role of microbial communities in health, environmental balance, and parallels between them.	2017	Established
<b>Educational Neuroscience</b>	Fusing neuroscience and child learning research into one novel discipline: educational neuroscience to improve the educational experiences of children in BC and beyond	2017	Emerging
<b>Global Challenges to Democracy: Rights, Freedoms, and Self-Determination</b>	Reimagining more inclusive democracies and global institutions that enhance human rights and indigenous self-determination, and working towards overcoming the global challenges to democracy.	2017	Emerging
<b>Hidden Costs of Global Supply Chains (HCGSC)</b>	Engaging communities, mobilizing new knowledge, and facilitating policy response to the social and environmental impacts of global supply chains	2017	Emerging
<b>Indigenous/Science</b>	Applying expertise in isotope and trace element geochemistry, spectroscopy, and archaeology to Indigenous-led research questions with practical implications for Indigenous communities.	2017	Emerging
<b>Pain Research Network</b>	Identifying better approaches for the management of pain in Canada	2017	Emerging
<b>Physical Activity for Precision Health</b>	Transforming how physical activities are prescribed, monitored, and implemented to promote health and wellbeing across the health continuum and lifespan	2017	Emerging
<b>Re-Imagine Aging</b>	Informing the development of a healthy aging strategy for BC and providing input into Canada's national senior's strategy.	2017	Emerging
<b>Reimbursement and Pricing Policy for Drugs for Rare Diseases</b>	Exploring orphan drug reimbursement policies around the world with the goal of informing the development of better informed decision-making processes for Canada	2017	Emerging
<b>Rhythm Research Cluster</b>	Investigating questions fundamental to our understanding of musical rhythm and rhythmic play	2017	Emerging
<b>SmarT Innovations for Technology Connected Health (STITCH)</b>	Creating and investigating advanced wearable devices that collect personalized information about our bodies and physical environments to expand geography of care and improve outcomes..	2017	Emerging
<b>Systematically Identifying, Evaluating, and Responding to</b>	Systematically identifying environmental injustices in Canada: patterns of pollution and other environmental hazards that fall disproportionately	2017	Emerging

<b>Cluster Name</b>	<b>Description/Goals</b>	<b>Year(s)</b>	<b>Category</b>
<b>Environmental Injustices in Canada</b>	and unfairly on the shoulders of economically or socially vulnerable communities.		
<b>The Frail Young: Care for children with complex illnesses, their families and communities</b>	Creating a new, national research agenda and interdisciplinary research teams to support excellent care for frail children and their families	2017	Emerging