



SUBJECT UBC RESEARCH EXCELLENCE CLUSTERS INITIATIVE

MEETING DATE APRIL 19, 2018

Forwarded to the Board of Governors on the Recommendation of the President

**APPROVED FOR
SUBMISSION**

Santa J. Ono, President and Vice-Chancellor

FOR INFORMATION

Report Date March 16, 2018

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EXECUTIVE SUMMARY

Tackling complex issues and challenges requires collaboration across research disciplines. Collaborating across disciplines also increases research excellence and socio-economic impact. The UBC Research Excellence Clusters Initiative was created by the offices of the Vice-President Research & Innovation and the Provost and Vice-President Academic in 2015 to foster the formation and growth of interdisciplinary research teams. To date, \$5.5M from the UBC Excellence Fund has been provided to clusters with over \$20M in funding obtained, additional partnerships formed, policy discussions initiated and spin-off companies formed. This presentation will report on the initiative, its impact to date and its trajectory.

INSTITUTIONAL STRATEGIC PRIORITIES SUPPORTED

- Learning
- Research
- Innovation
- Engagement
(Internal / External)
- International

or Operational



UBC Research Excellence Clusters

Research clusters are interdisciplinary networks of researchers focused on solving key challenges facing society. They enable leading researchers to work closely together as a unit on problems that transcend the traditional boundaries associated with departments, institutions, and funding agencies.

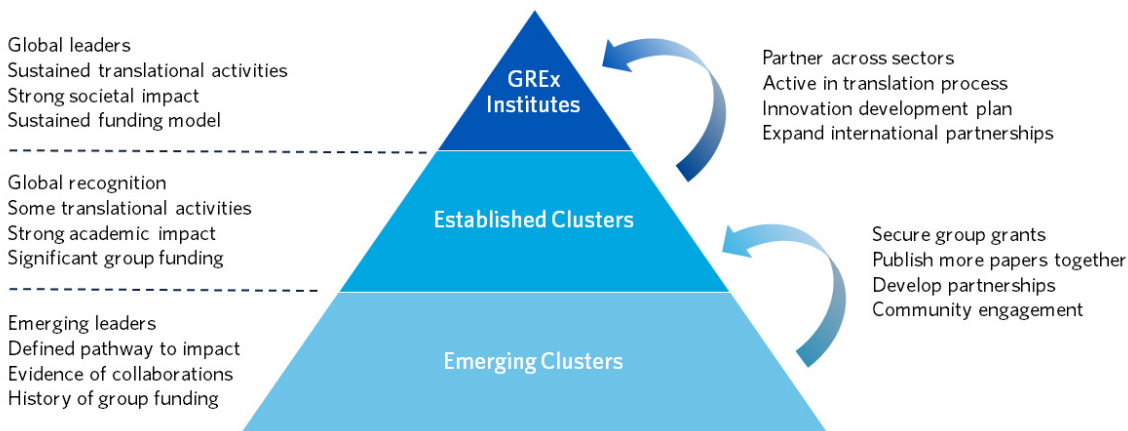
It is widely acknowledged that tackling complex issues and challenges requires collaboration across research disciplines, and that this collaboration increases research excellence as well as socio-economic impact. Reflecting this, many large-scale federal funding programs are only available to research teams. However, few mechanisms have existed to support the emergence and development of research teams.

The UBC Research Excellence Clusters initiative was created by the offices of the Vice-President Research and Innovation and the Provost and Vice-President Academic in 2015 to address this gap. Supported by the UBC Excellence fund the initiative identifies existing and emerging research clusters in order to provide support for activities that enable cluster growth. These activities include:

- funding for catalytic activities (not direct research costs);
- website development and outreach;
- direct access to research leadership; and
- innovation development.

Cluster development

The intent of the initiative is to support both new, emerging clusters, and to help established clusters continue to develop to potentially become UBC Global Research Excellence (GREx) institutes.



Funding Competitions

On the Vancouver campus, four funding cycles have taken place. Initial funds were awarded in response to internal peer-reviewed based selection process that was carried out to identify proposals for the Canada first Research Excellence Fund (CFREF). Following that, three Grants for Catalyzing Research Cluster (GCRC) competitions have been held.

Awards are now made at two levels: emerging clusters are eligible for one-year grants of up to \$100k, and established clusters are eligible for one-year awards of up to \$200k. Clusters can apply for grants each year.

<u>Competition</u>	<u>Year</u>	<u>Disciplines</u>	<u>Applications</u>	<u>Awards</u>	<u>Total \$</u>
CFREF Task Force	2016	Federal priorities	108	14	\$1,242,000
GCRC	2016	Social Sciences & Humanities	26	7	\$300,000
GCRC	2016	Performing & Creative Arts	13	4	\$158,000
GCRC	2017	All	87	29	\$3,537,500
					\$5,237,500

The Okanagan campus launched the Eminence Program, managed separately by the office of the Vice-Principal Research UBC Okanagan in 2016. These awards are for three-year terms, may be renewed once, and are valued between \$20k and \$200k.

Currently Funded Clusters

The Research Excellence Clusters initiative currently supports 33 research groups, and a further nine have received support in the past. Five clusters have been selected through the UBC Okanagan's Eminence Program. Clusters span the range of health, STEM, social sciences, humanities and creative and performing arts. A list of funded clusters can be found at the end of this document.

Early Outcomes and Impacts

While the initiative is still in the very early stages for many tangible research impacts, the clusters are already reporting impressive outcomes from the funding.

Increased Collaboration

- The funding has created new academic partnerships across faculties and external institutions. One example of this is the Global Challenges to Democracy's international dialogues held in May 2017.
- New external partnerships have been created and existing partnerships have been significantly expanded as a result of activities supported by the funding. Examples involve external industries and organizations such as: STEMCELL Technologies, Canadian Blood Services, Stats Can, Vancouver School Board, Science World, and the City of Vancouver
- Clusters have been able to participate and provide leadership in national networks. Examples: the BioProducts Institute led an NCE application for BioProducts Institute, and the Advanced Manufacturing cluster was heavily involved in a federal Innovation Supercluster proposal.
- Multi-sectoral advisory boards have been established by a number of clusters

Leveraged Funding

The cluster funding has allowed a number of clusters to attract large team grants, a sample of which are provided below.

- CFI Team Grants (e.g., \$16M to BioProducts Institute)
- NSERC CREATE (\$1.6M to Designing for People)
- SSHRC Partnership Grant (\$3.5M to Implicit Gender Bias in STEM)
- NSERC Strategic Partnership Grant (\$591k to Language Sciences Institute)
- German Aerospace Research Institute (\$500k to Advanced Manufacturing)

Research Outputs

In addition to generating novel lines of enquiry, the cluster funding has already led to increased participation in policy discussions with local, provincial, and federal governments (e.g., CoolTools involvement in Climate Action Plan) and two spin-off companies have been launched by funded clusters (CastOp and Jeti Resources).

Other Outcomes and Impacts

In addition to anecdotal reports of the clusters providing an increased sense of community and purpose among researchers, other cluster-funded activities have included increased networking opportunities for graduate students and trainees, the development of inter-disciplinary curriculum and summer courses and have led to external recognition, such as federal ministers providing video messages acknowledging the importance of the work and role played by the Wingspan initiative.

Initiative Assessment

The UBC research excellence clusters initiative has been funding clusters for just over 18 months. At a research cluster exchange event in early April 2018 we are gathering best practices that can help accelerate the development of clusters. We are defining a framework for tracking outcomes and impacts in order to help assess the initiative. In particular, we are refining our approaches to tracking collaborations. We will also survey faculty who have been, or who have shown an interest in being, involved in a cluster to understanding the drivers for participation, the individual outcomes realized, and to identify gaps in the initiative that need to be addressed.

Funded Clusters: Research Excellence Clusters (UBC Vancouver)

Established Research Clusters (10)

Health: BCREGMED: Cellular and Regenerative Therapies through Collaborative, Innovative Science*, The UBC Airway Centre, Data Analytics and Systems Science (DASS) to Optimize Heart + Lung Health*

STEM: Microbiome Research Network: Microbial Interactions and Microbiome Function*, Designing for People (DFP)*, Advanced Materials Manufacturing*, Biodiversity Research: An Emerging Global Research Priority*, BioProducts Research Cluster*

Social Science and Humanities: Language Sciences: UBC and Beyond*, Forests and Livelihoods for Sustainable Development*

Emerging Research Clusters (23)

Health: Pain Research Network: Confronting a Global Challenge, Origins of Balance Deficits and Falls, Physical Activity and Health Research Cluster, Orphan Drugs and Rare Disease Policy, Dynamic Brain Circuits in Health and Disease Research Excellence Cluster*, Biomedical Imaging and Artificial Intelligence, The Frail Young: Care for children with complex illnesses, their families and communities, Diabetes: From Beta Cells to Bedsides, SmarT Innovations for Technology Connected Health (STITCH)

STEM: Blockchain@UBC Cluster, Bionics@UBC: 3D Microfabricated Arm with Sensation and Neural Control

Social Sciences and Humanities: Systematically Identifying, Evaluating, and Responding to Environmental Injustices in Canada, Hidden Costs of Global Supply Chains*, Educational Neuroscience, Global Challenges to Democracy: Rights, Freedoms, and Self-Determination*, Immigration, Integration, and National Identity, Critical Racial & Anti-Colonial Studies Thematic Network (CRACS)*, Indigenous/Science at UBC: Partnerships in the Exploration of History and Environments, Towards a long-term research network for diversified agroecosystems, Re-Imagine Aging

Creative and Performing Arts: Theatre and Mental Health*, Exploring Musical Time*, Wingspan: Dis/ability Arts, Culture & Public Pedagogy*

**clusters have received renewals*

Previously Funded Clusters (9)

Ethical and Societal Response and Governance of Gene Editing and Gene Drives (GEGD), Forest and Plant Productivity, The Future Oceans, Globalized Product and Labour Markets, Implicit Gender Bias in STEM, NanoMedicines Research Centre, Remembering and Commemorating Trauma, Social Mobilization on Climate Change using Digital Media, Translational Cancer Genomics Cluster

Funded Clusters: Research Excellence Clusters (UBC Okanagan)

UBC Okanagan Clusters (5)

Community Health, Exosome Isolation, Green Infrastructure, Medical Physics and Data Analytics, Neurobiology