Precision Medicine RFP
Peter Munk Cardiac Centre Innovation Committee

This RFP aims to support studies that will advance our understanding of diseases that impact the patients we serve through the use of genomic (and proteomic) profiling, to increase our knowledge of the drivers of disease and their severity. Our vision is to create an environment where genomic information is integrated with patients' clinical and imaging data to enable the selection of personalized treatment options for individual patients.

We anticipate the studies submitted through this RFP for Precision Medicine projects will leverage the following resources:

1. NovaSeq X Plus gene sequencing units, which will decrease the time required to complete whole genome sequencing (WGS, including genomes, epi-genomes, and transcriptomes) by 50% and reduce the cost of WGS to about 400 dollars per patient.
2. The Digital Cardiovascular Health Platform (DCHP), a secure high-performance data integration platform for research that enables data ingestion and integration workflows, user-facing tools to explore and request available data, and a high-performance analytics environment.
3. The PMCC biobank, which currently holds 273,441 biospecimens, including DNA (1,900), frozen tissue (2,957), buffy coat (53,808), serum (76,405) and plasma (138,371).
4. The PMCC AI Team, which has developed BIONIC: biological network integration using convolutions a deep learning algorithm that makes it feasible to assess numerous networks on the human genome scale and could play a central role in analyzing the WGS data.
5. The clinical expertise that exists in the PMCC.

Projects submitted through this RFP should be innovative with a clear impact on understanding disease and have ultimate clinical relevance. Given the sizeable patient populations required for genomic studies, we encourage applicants to seek collaborative partnerships with other Canadian or International Centres that may be able to contribute biospecimens for whole genome and epi-genome analysis, and to identify co-funding opportunities to share study costs. Innovation Committee funding will be limited to up to $500,000 per project.

Please submit completed applications to Dr. Harry Rakowski
Dr.Harry.Rakowski@uhn.ca

Deadline for submissions: June 30, 2023

1. Title of Project:

2. Principal Investigator (name, division, e-mail):

3. Co-Investigators (name, division, email):

4. Collaborators (name, division, email):

5. Brief Lay Summary (up to 500 words).

6. Background (up to 2 pages): Please define the following;

a. The unique PMCC patient populations to be studied.
b. The prevalence of the disease in Canada.
c. The impact on the Canadian healthcare system.
d. The ability to quantitate disease severity.
e. The availability of outcomes and genomic/proteomic data collected to date.
f. The data related to this patient population that has been captured in the Digital Cardiovascular Health Platform (DCHP) or elsewhere.

7. Describe the specific objectives of the project. (up to 1/2 page)

8. Describe the methods (including metrics) that will be used. (up to 1/2 page)

9. Describe partnerships with national and international centres and their ability to contribute biospecimens for whole genome and epigenomic analysis. Outline any opportunities for collaboration with multi-centered groups. (up to 1 page)

10. Describe the potential for the initiative to improve the patient's experience and satisfaction. (up to 1/2 page)

11. Describe the feasibility of implementing this initiative, the barriers to implementation and likelihood of success, and the time frame to implementation. (up to 1 page)

12. What is the status of ethics approval to the Research Ethics Board at UHN? (up to 1/2 page)?

13. Indicate the potential for commercialization. What is the expected IP? Are there any patents held or have been applied for? (up to 1 page)

14. Describe the funding requirements in years 1 and 2 under the following headings with detailed justification for the need.

Indicator	Year 1	Year 2
Personnel		
Data management		
Whole genome sequencing (assuming $400/patient for Whole Genome Sequencing)		
Proteomic/biomarker costs		
Biobank costs		
Imaging costs		
AI analysis costs		
Other, including potential linkage with ICES data		
Total		

15. Are there any other funding sources for this initiative? If so, please elaborate. Is matching support from existing companies or institutions available? (up to 1/2 page)

16. What is your strategy to identify sustainable funding? (up to 1/2 page)