

BC's BioLibrary – Partnering with Patients on the Journey to Personalized Healthcare

Estimated Total Project Cost: \$10 million in BC, \$5 million in Alberta

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Canadian healthcare is at a crossroads between traditional Western and personalized medicine. The realization of personalized medicine requires targeted guidance and products that predictably provide effective and safe treatment and prevention. The path to personalization involves creating alternatives to drug treatment-only strategies through better definition of disease categories and identification of better predictives and diagnostics. Matching the right preventive or treatment with the right patient at the right time becomes plausible as we understand human biology using -omics tools, powerful computational strategies, and environmental, behavioral and genetic data in an integrated framework. Unprecedented progress has been made in -omics, molecular imaging and drug discovery, however, the potential for drug discovery remains largely untapped and the gap between the pace of advances and the successful exploitation of such knowledge for human benefit continues to grow. The lack of high quality, annotated biospecimens representative of diseased populations is a contributor to this chasm. Major issues that need to be solved include increased quality of biospecimens, enhanced capacity through collection at multiple sites, improved representation of the population and spectrum of disease, and maintenance of public trust.

The Michael Smith Foundation for Health Research funded the creation of 5 provincial, cross-cutting technology/methodology platforms with a mandate to enhance health research across British Columbia, of which the BC BioLibrary is one. The BC BioLibrary will acquire, organize, and distribute human biospecimens to research studies, clinical trials and biobanks. The strategic solution used includes components that are novel for the biobanking community; primarily the repatriation of biobanking accrual to the source of biospecimens, the clinical discipline of pathology. The BC Biolibary initiative currently encompasses major academic health sciences centers within Vancouver. The proposed infrastructure will extend the vision of this recent initiative from a tertiary care center to a representative population-scale accrual network across health centers in BC.

The BC BioLibrary is proposing the following infrastructure to support population-based research:

- 1) Implement BC public engagement to build a patient-as-partners environment for biospecimen donors to participate in biobanking.** This is essential to enhance ongoing biobanking as a promoted activity in BC and also to explore possible ways to improve the efficiency and acceptability in the ways in which biobanks engage consented donors
- 2) Implement Biospecimen Collection Units in hospital pathology departments across BC.** This is essential for higher and standardized quality of biospecimens and to enable biospecimen collection at multiple sites across centers and regions. These enhancements will raise the capacity, capability and competitiveness of translational research for all of us in BC.
- 3) Create off-site, mirrored, monitored storage for frozen biospecimens.** This is essential to lower research costs in current institutions by moving ever expanding freezer space to readily accessed, secure, and cheaper available space outside our research laboratories. It is also essential to create backup storage space for our increasingly valuable study and biobank collections in the event of local disasters.

The primary areas of research enabled by the infrastructure include the spectrum of research performed on human biospecimens. In particular, initiatives that utilize population-based cohorts for biomarker discovery, validation, qualification, and translation, for disease risk assessment and stratification, personalized healthcare initiatives, or any form of translational research will be particularly enabled. The vision of the current application will be enabled by formation of strategic, cross-disciplinary and cross-sector partnerships between patients, the healthcare system, private entrepreneurs and policy makers, scientific disciplines, departments, and stakeholders in disease categories and across geographic regions. The focus of the current proposal is to enable infrastructure in British Columbia and Alberta that will produce research breakthroughs related to a range of burdensome healthcare issues and in translation of advances into the clinic.