

2010 Large-Scale Applied Research Project Competition – Approved Pre-Applications

Genome Centre(s) ¹	Project Leader(s)	Lead Organization	Project Title	Competition	Methods and Technologies
Genome BC Genome Alberta	Aitken, Sally Hamann, Andreas	University of British Columbia	AdapTree: Assessing the adaptive portfolio of reforestation stocks for future climates	Targeted	Candidate genes, SNPs, high-throughput genotyping, temperature stress, drought stress, geospatial analysis, association mapping
Genome BC	Connors, Joseph Marco, Marra Gascoyne, Randy	BC Cancer Agency	Lymphoid Cancers: Turning Basic Science into Clinical Reality	Multi-Sector	Sequencing, informatics, pharmaco-economics, research ethics
Genome BC	Douglas, Carl Mansfield, Shawn	University of British Columbia	POPCAN: Genetic improvement of poplar trees as a Canadian bioenergy feedstock	Targeted	Resequencing, association genetics, natural variation, phenotyping, marker assisted breeding
Genome BC	Eltis, Lindsay Mohn, William	University of British Columbia	Harnessing microbial diversity for sustainable use of forest biomass resources	Targeted	High throughput activity screens for biocatalysts, metagenomic analyses of microbial communities, high-throughput sequencing analysis of microbial community composition, metabolic engineering
Genome BC Genome Alberta	Foster, Leonard Pernal, Stephen	University of British Columbia	Next-generation integrated pest management tools for beekeeping	Multi-Sector	Proteomics, Metabolomics, Agri-economics, Selective Breeding, Host-Pathogen Interactions
Genome BC	Hamelin, Richard	University of British Columbia	Genomics-Based Forest Health Diagnostic and Monitoring	Targeted	Genomics profiling, genome sequencing, genome comparison, metagenomics, DNA detection
Genome BC Genome Atlantic	Koop, Ben Fast, Mark	University of Victoria	Genomics Tools to Resolve Environmental Impact And Treatment Resistance in Sea Lice (TREAT)	Targeted	SSH, SNP microarray, risk models, qPCR, sequencing
Genome BC	Marziali, Andre	University of British Columbia	Portable DNA Extraction and Pathogen Detection System	Multi-Sector	Electrophoresis, SCODA, non-linear, phase-lock, hybridization

¹ Genome Centre(s) associated with the Project Leader(s) and Co-Project Leader(s)

Genome BC	Sahinalp, Cenk Birol, Inanc	Simon Fraser University	An Integrative Computational Platform for PetaScale Sequence Analysis	Multi-Sector	Personal sequence assembly based on ABySS platform; structural variation detection via VariationHunter platform; multiple sequence alignment based on FAST & CO platform; SNV variation and fusion detection platforms; generalization to multiple genome comparison, algorithm, software and data integration
Genome BC	Tang, Patrick Isaac-Renton, Judith	University of British Columbia	Applied Metagenomics of the Watershed Microbiome	Targeted	Metagenomics, bioinformatics, microbial transport and dynamics modeling, microbial source attribution, water quality indicators
Genome Alberta OGI	Moore, Stephen Miller, Stephen	University of Alberta	Whole Genome Selection through Genome Wide Imputation in Beef Cattle.	Multi-Sector	High Density Genotyping, Whole Genome Sequencing, Genotype Imputation, Haplotype Derivation, Genome Wide Selection, Molecular Breeding Values
Genome Alberta OGI	Plastow, Graham Kemp, Bob	University of Alberta	Application of genomics to improving swine health and welfare.	Multi-Sector	Disease Challenge, Disease Outbreaks, Next Generation DNA sequencing, High Density SNP Panels, Transcriptomics, Proteomics, Kinomics, Bioinformatics.
Genome Prairie	Potter, Andrew Gerds, Volker	University of Saskatchewan	Vaccinomics for Animal Disease	Multi-Sector	Proteomics, sequencing, kinome, recombinant DNA, immunization
Genome Prairie	Pozniak, Curtis Hucl, Pierre	University of Saskatchewan	Genomic Strategies to Improve Wheat Breeding in Canada	Multi-Sector	Next generation DNA sequencing, allele mining, bioinformatics, phenomics
Genome Prairie	Rysgaard, Soeren Barber, David	University of Manitoba	GENICE: Genomics of Ice Environments	Targeted	DNA fingerprinting and deep sequencing, stable isotope probing for carbon cycling, targeted proteomics and transcriptomics for hydrocarbon and mercury cycling, microcalorimetry assays of ice brines and microbial polymers for cryopreservation biotechnology
Genome Prairie	Vandenberg, Albert Sharpe, Andrew	University of Saskatchewan	Lentil Genomics for Canada (Len-Gen)	Targeted	Next generation sequencing (genome, transcriptome and genotyping); High density SNP genotyping (GWAS); Bioinformatics (genome assembly, re-sequencing comparative analysis, SNP discovery / genetic mapping, GWAS)

OGI	Altosaar, Illimar Smith, Jeffrey	University of Ottawa	Starch Regulomics	Targeted	Mass spectrometry, iTRAQ Analysis, Bioenergy Biomarker Discovery by Mass Spectrometry, Starch excess mutants, Giant granule mutants (ssg1)
OGI	Brudno, Michael Scherer, Stephen	Hospital for Sick Children	Canadian Initiative in Medical Sequencing and Informatics (CIMSI)	Multi-Sector	Genome Sequencing, Medical Annotation, Genomic Structural Variation, Informatics, GE3LS
OGI	Danska, Jayne	Hospital for Sick Children	SIRP α -CD47 therapies to enhance and modulate stem cells (STEMs)	Multi-Sector	Mouse xenotransplant models, iPS, immunological assays, phos-flow proteomics, gene expression microarrays, therapeutic fusion proteins
OGI Genome Alberta	Ekker, Marc Waskiewicz, Andrew	University of Ottawa	Zebrafish for Envirogenomics	Targeted	TILLING, Zinc Finger nucleases, mutagenesis, transgenic models.
OGI	Fan, Ming Moreno-Hagelsieb, Gabriel	University of Guelph	Metagenomic Mining of Porcine Gut Symbiotic Microbial Enzymes for Lignocellulose Degradation	Targeted	Collaborative and multi-disciplinary systems biology and integrative research tools; induction of novel microbial β -glycosyl hydrolases in the porcine gut by feeding processed agricultural feedstock substrates; extraction of intestinal microbial genomic DNA; metagenomic libraries; Illumina-based high-throughput sequencing and bioinformatic analyses of microbial hemicellulases and cellulases genes
OGI	Greenblatt, Ellen King, W. Alan	Mount Sinai Hospital	Genomic and proteomic approaches to improve success of human and bovine <i>In vitro</i> fertilisation	Multi-Sector	Gene expression profiling, arrayCGH, NanoString, multiplex ELISA, mass spectrometry
OGI	Hajibabaei, Mehrdad	University of Guelph	Biomonitoring 2.0: A high-throughput genomics approach for comprehensive biological assessment of environmental change	Targeted	Next-generation sequencing, DNA barcoding, phylogenetics, bioinformatics
OGI	Hedley, David Jurisica, Igor	University Health Network	Integrative approach to improving pancreatic cancer treatment, quality of life and survival	Multi-Sector	Genomics, proteomics, primary xenograft models, Integrative computational biology, clinical trials

OGI Génome Quebec	Krell, Peter Bede, Jacqueline Seguin, Armand	University of Guelph	Genomics for the detection and mitigation of invasive forest pests: Emerald Ash Borer-Ash interaction	Targeted	Whole genome sequencing, in-vitro functional assays, expression profiling, metabolomic profiling, metagenomic analysis
OGI	Mak, Tak Bedard, Philippe	University Health Network	Genome Wide Analysis of Cancer Drug Resistance	Multi-Sector	High-throughput sequencing, gene expression profiling, animal models
OGI	McKerlie, Colin	Mount Sinai Hospital	Functional annotation of the genome for pre-clinical mouse models and therapeutic targets: Canada-UK's contribution to the IMPC	Multi-Sector	Mutagenesis, mouse model creation, high- throughput phenotyping, imaging, pathology, in vivo drug target characterization, in vivo drug validation
OGI	Regan, Sharon	Queen's University	Poplar Omics Widens Energy Resource	Targeted	Activation tagging, transcript profiling, next generation sequencing, proteomics, metabolomics
OGI	Sidhu, Sachdev Boone, Charles	University of Toronto	Synthetic antibody platform: commercial reagents and novel therapeutics	Multi-Sector	Synthetic Antibodies, Phage Display, High Content Screening, Mass Spectrometry, Yeast Display
OGI	Somers, Daryl Dixon, Michael	Vineland Research and Innovation Centre	Mitigating the environmental impact of horticulture production through novel traits	Targeted	EMS mutation, next-generation sequencing, high- resolution DNA melting, controlled environment
OGI Genome BC	Taylor, Michael Marra, Marco	Hospital for Sick Children	Stratifying and Targeting Pediatric Medulloblastoma Through Genomics	Multi-Sector	Cancer genome sequencing, transcriptome profiling, bioinformatics
Génome Québec OGI	Antoun, Hani Finan, Turlough	Université Laval	Arctic Rhizobium low Temperature Adaptation and Nodulation properties (ARTAN)	Targeted	Cold adaptation genes, nodulation genes, genome sequencing, low temperature physiology, gene knock-out.
Génome Québec	Lang, B. Franz Hijri, Mohamed	U de M	Improving Bioremediation of polluted soils through Environmental Genomics	Targeted	Sanger sequencing; Whole genome shotgun and paired-ends 454 pyrosequencing; PCR amplicon pyrosequencing; Illumina sequencing; Plant and microbial transcriptome analyses; cDNA and genomic libraries; Cloning; Bioinformatics; Development of sequence databases.

Génome Québec Genome Atlantic	Levesque, Roger Cusson, Michel Lucarotti, Christopher	Université Laval	BEGAB: Budworm EcoGenomics: Applications & Biotechnology	Targeted	Genome sequencing, DNA bar-coding, SNP discovery, microarray analysis, ecological modeling
Génome Québec Genome BC	MacKay, John Bohlmann, Joerg	Université Laval	SMarTForest : Spruce Marker Technologies for Sustainable Forestry	Targeted	High-throughput genotyping, association genetics, genomic selection, functional genomics, genome sequencing.
Génome Québec OGI	Martin, Vincent Mahadevan, Krishna	Concordia	A Synthetic Biology Platform for the Sustainable Production of Chemicals	Targeted	Genome sequencing, Large scale genome synthesis, Large scale genome deletions and insertions
Génome Québec	Rioux, John D. Lettre, Guillaume	ICM	Genomic medicine of complex traits – improving our understanding of disease for developing diagnostic tools and therapeutic targets	Multi-Sector	Sequencing, association, high-content screening, functional genomics
Génome Québec	Rousseau, François	Université Laval	Streamlining the Translational Pipeline of Genomic Innovations to HealthCare – A Large Scale Stand-Alone GE3LS Project	Multi-Sector	Evidence-based genomic medicine; Health economics; Health technology assessment; Implementation research; Health services research, Health policy research
Genome Atlantic Genome Prairie	Caldwell, Claude Parkin, Isobel	Nova Scotia Agricultural College	Camelina: Revitalising Oilseed Productivity in Canada (CROP- CANADA)	Multi-Sector	Next Generation Sequencing, High Throughput SNP Analysis, Microarray Analysis, TILLING, Bioinformatics
Genome Atlantic	McMaster, Chris Fernandez, Conrad	Dalhousie University	Identifying New Genes and Medicines for the Treatment of Orphan Diseases	Multi-Sector	Exome Sequencing using NGS, Microarrays, Yeast Synthetic Genetic Arrays, Zebrafish Trans-genetics