

Registrations for the 2010 Large-Scale Applied Research Project Competition.

This information has been provided to facilitate the identification of areas of potential synergy between applications from across the country so that applicants could consider engaging with other researchers on a common project. This will also make possible the exchange of required information between project teams and applicants to the Science and Technology Innovation Centre Competition.

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome BC	Aitken, Sally Co-Leader: Hamann, Andreas	University of British Columbia	Assessing the adaptive portfolio of reforestation stocks for future climates	Forestry; GE ³ LS	Candidate genes, SNPs, high-throughput genotyping, temperature stress, drought stress, geospatial analysis, association mapping
Genome BC	Bohlman, Joerg Co-Leader: MacKay, John	University of British Columbia	Spruce Genomics: Genetic Management and Breeding Tools for Productive Forests and a Sustainable Industry	Forestry	High-throughput genotyping, association genetics, genomic selection, functional genomics, genome sequencing
Genome BC	Brooks-Wilson, Angela R.	BC Cancer Agency	Genomics of Healthy Aging	Health	Gene expression, genome-wide association study (GWAS), genotyping
Genome BC	Collins, Colin Co-Leader: Gleave, Martin	Vancouver Prostate Centre	Validation and Implementation of the GEMCaP Biomarkers for Prostate Cancer Management	Health; GE ³ LS	aCGH, MIPS, NGST
Genome BC	Connors, Joseph Co-Leader: Marra, Marco	BC Cancer Agency	Apply Genomics Techniques to Personalized Detection, Prevention and Treatment of Lymphoid Cancers: Turning Basic Science into Clinical Reality	Health; GE ³ LS	Sequencing, informatics, pharmacoeconomics, research ethics
Genome BC	Cronk, Quentin	University of British Columbia	Characterization of genes and related genetic variations underlying forest tree biomass production and (mal) adaptability	Forestry; GE ³ LS	Association genetics, Novel gene discovery, SNP genotyping, RNA seq
Genome BC	Cullis, Pietre Co-Leader: Hansen, Carl Lars	University of British Columbia	In Vivo Functional Genomics Platform (IVFGP).	Health; Technology Development	Nanoparticles, RNA interference

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome BC	Douglas, Carl Co-Leader: Mansfield, Shawn	University of British Columbia	POPCAN: Genetic improvement of poplar trees as a Canadian bioenergy feedstock	Environment; Forestry	resequencing, association genetics, natural variation, phenotyping, marker assisted breeding
Genome BC	Dunn, Sandra Co-Leader: Gelmon, Karen	University of British Columbia	Tumour-initiating cells predict drug resistance and define a novel target for the treatment of breast cancer	Health	deep-sequencing, high-content screening, molecular docking, off-patent agents, tumour-tissue microarrays, PET imaging, neoadjuvant clinical trials
Genome BC	Eltis, Lindsay Co-Leader: Mohn, William	University of British Columbia	Harnessing microbial diversity for sustainability	Environment; Forestry; GE ³ LS;	High throughput activity screens for biocatalysts, metagenomic analyses of microbial communities, high-throughput sequencing analysis of microbial community composition, metabolic engineering
Genome BC	Foster, Leonard	University of British Columbia	Next-Generation Integrated Pest Management Tools for Honey Bees	Agriculture	Proteomics, Metabolomics, Agri-economics, Selective Breeding, Host-Pathogen Interactions
Genome BC	Friedman, Jan Co-Leader: Boerkoel, Cornelius	University of British Columbia	Metabolomic and genomic profiling of children with intractable seizures	Health	Metabolomics, Exome sequencing, bioinformatics, proteomics
Genome BC	Gallagher, Richard Co-Leader: Oberlander, Tim	BC Cancer Agency	A New Platform for Population-based Health Research in Canada	Health; GE ³ LS	Linkage tools, public/participant governance models, statistical genetics modeling, epidemiologic methods
Genome BC	Goldowitz, Daniel Co-Leader: Miller, Steven	University of British Columbia	BADGS: Brain Abnormal Development: Genetics and Systems	Health; GE ³ LS	Imaging, microarray, databases, phenotyping, next generation sequencing, transgenic mice, in utero gene knockdown
Genome BC	Hallam, Steven	University of British Columbia	Microbial Sentinels of Environmental Change: Climate Effects and Ecosystem Dynamics Across Canada's Three Oceans	Environment; GE ³ LS; Technology Development	Metagenomics, Ocean Observing Systems, Ecogenomic Sensing, Ecological Modelling, Social Network Analysis
Genome BC	Hamelin, Richard	University of British Columbia	Diagnostic, Monitoring and Prediction of Forest Disease Outbreaks	Forestry	Genomics profiling, genome sequencing, genome comparison, metagenomics, DNA detection

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome BC	Hamelin, Richard Co-Leader: Saville, Barry	University of British Columbia	Genomic Approaches to Mitigate the Impact of White Pine Blister Rust (GeM-WPBR)	Forestry; Environment; GE ³ LS	Association mapping, next generation sequencing, screening bioassays and DNA-based detection assay development, genome mapping, transcriptome/proteome analysis
Genome BC	Hancock, Robert	University of British Columbia	Genomics of Adjuvant Systems (GAS)	Health	Systems biology mapping and tools development, mechanistic studies, mouse models, peptide formulations
Genome BC	Hayden, Michael Co-Leader: Goldberg, Paul	University of British Columbia	Human proof of concept studies for novel therapeutics & companion diagnostics targeting medical need caused by too much and too little hepcidin	Health	Applied pharmacogenomics, human proof of concept, hepcidin biomarker, hemojuvelin antisense, small molecule DMT1 inhibitor
Genome BC	Henry, Greg Co-Leader: Rieseberg, Loren	University of British Columbia	Genomics of adaption to climate change in Arctic Ecosystems	Environment	Genome sequencing, transcriptome analyses, bisulfite sequencing, population genomics, common garden experiments
Genome BC	Holt, Rob Co-Leader: Nelson, Brad	BC Cancer Agency	Genomic approaches to T cell antigen discovery and validation	Technology Development	T cell expansion, ELISPOT, flow cytometry, T cell receptor profiling
Genome BC	Huntsman, David Co-Leader: Aparicio, Samuel	BC Cancer Agency	Clinical and Biologic Implications of Intra-tumoural Heterogeneity	Health	Cancer, Intratumoural heterogeneity, Cell Subpopulations
Genome BC	Jacobson, Kevan	University of British Columbia	Biomarker Development for Diagnosis, Stage Identification and Prediction of Treatment Response and Disease Management in Inflammatory Bowel Disease	Health; GE ³ LS; Technology Development	Proteomics, Metabolomics
Genome BC	Jeffries, Wilf	University of British Columbia	Phenotype Driven Screens in Embryonic Stem Cells	Health	Knockout, transgenic, phenotyping

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome BC	Keown, Paul Co-Leader: McMaster, Robert	University of British Columbia	Personalized medicine in transplantation: Development of biomarkers of immunological accommodation	Health	Genomics, proteomics, computational analysis, immunology, economic modeling
Genome BC	Koop, Ben Co-Leader: Fast, Mark	University of Victoria	Cutting Edge Genomic Approaches to Resolving Sea Lice Issues (CEGARSLI)	Environment; Fisheries/Aquaculture	SSH, SNP microarray, risk models, qPCR, sequencing
Genome BC	Kwon, Brian Co-Leader: Grigliatti, Tom	University of British Columbia	Gene Expression Profiling and Proteomic Investigation of Human Spinal Cord Injury	Health	Mass spectroscopy, 2D gel, microarray
Genome BC	Marziali, Andre	University of British Columbia	Portable DN Extraction and Pathogen Detection System	Technology Development	Electrophoresis, SCODA, non-linear, phase-lock, hybridization
Genome BC	Mattson, Jim Co-Leader: Rönnberg-Wästljung, Ann-Christin	Simon Fraser University	Genomics-based selection of Salix tree varieties for biomass production	Environment; Forestry; GE ³ LS; Technology Development	High-throughput DNA sequencing, Single Nucleotide Polymorphism detection, Life Cycle Assessment, Quantitative Trait Loci
Genome BC	McManus, Bruce Co-Leader: Dyck, Jason	University of British Columbia	Development of Diagnostic Biomarkers for Improved Heart Failure Management	Health	Genomics, Proteomics, Bioinformatics, Diagnostics
Genome BC	Sahinalp, Cenk Co-Leader: Biol, Inanc	Simon Fraser University	An Integrative Computational Platform for Peta-Scale Sequence Analysis	Health; GE ³ LS; Technology Development	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	Sandford, Andrew Co-Leader: Clark, Ann	University of British Columbia	Canadian peanut allergy cohort genome wide association study	Health	Genome wide association study, whole genome study, single nucleotide polymorphism, DNA sequence analysis, drug discovery
Genome BC	Sin, Don	University of British Columbia	Development of Novel Biomarker Blood Test for COPD	Health	Proteomics, Genomics, Bioinformatics, Diagnostics, Therapeutics

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome BC	Tang, Patrick Co-Leader: Isaac-Renton, Judith	University of British Columbia	Applied Metagenomics of the Watershed Microbiome	Environment	Metagenomics, bioinformatics, microbial transport and dynamics modeling, microbial source attribution, water quality indicators
Genome BC	van Niekerk Co-Leader: Karsan, Aly	BC Cancer Agency	Cervical Cancer Screening Biomarker Development	Health	Whole genome/transcriptome sequencing, methylation analysis, integration site analysis
Genome BC	Walley, Keith Co-Leader: Murkin, John	University of British Columbia	HARM-PROBE: Heart surgery Adverse Response exomic Markers – PRevention Of Brain Effects	Health	SCODA, Next generation sequencing
Genome BC	Wasserman, Wyeth Co-Leader: Kushniruk, Andre	University of British Columbia	Design and Evaluation of a Clinical Personalized Medicine Interface (CPMI) for Genome Analysis	Health	Software development; User Interface Design; Software Evaluation
Genome BC	Wasserman, Wyeth	University of British Columbia	E-books for Genomic Science Communication GE ³ LS proposals	Technology Development; GE ³ LS	E-reader, Software, Wiki
Genome Alberta	Cairncross, Gregory Co-Leader: Marra, Marco	University of Calgary	Therapeutic targeting of the clinical and genetic diversity of glioma	Glioblastoma, Oligodendroglioma, Biomarkers, New Therapeutics	Cancer Stem Cells, DNA Sequencing, High-Throughput Drug Screens
Genome Alberta	Cooke, Janice Co-Leader: Sidders, Derek	University of Alberta	Integrating genomics and value: minimizing risk in the scaling-up of short rotation woody crop production using a national network of sites	Short rotation woody crops; bioenergy; clonal deployment; vertical integration of genotyping, phenotyping, and economic assessment; nationwide network of sites; sustainability; best practices	Next generation sequencing; Illumina; SNPs; genome scan; phenotyping platform; comparison of management regimes; physical and chemical fibre attributes
Genome Alberta	Deyholos, Michael Co-Leader: Vidmar, John	University of Alberta	Genomics of Industrial Hemp	Plant development, Fiber, lignin, cellulose, biomass,	whole genome sequencing, SNPs, mapping, proteomics, reverse genetics

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome Alberta	Deyholos, Michael Co-Leader: Zhang, Jian	University of Alberta	AGERC (Applied Genomics for Environmental Remediation in Canada)	plant-microbe-interactions, application of ecogenomics and metagenomics, demonstration of remediation/reclamation.	metagenomics, ecogenomics, remediation, native plant for restoration, gene expression of plant-microbes interactions
Genome Alberta	Gilleard, John	University of Calgary	Genomics-assisted Production and Health Management (GAPHM) System in Feedlot Cattle	Health management, feedlot cattle, anti-microbial resistance, animal welfare, genomics	SNP, microarray, sequencing, genetic epidemiology, bioinformatics
Genome Alberta	Hallgrimsson, Benedikt Co-Leader: Sheldon, Robert	University of Calgary	Understanding and managing syncope, cleft palate and pre-term birth using coordinated genomics, model systems and ethics approaches	genome-wide association studies, phenogenomics, model animals, cleft lip and palate, preterm birth, vasovagal syncope, ethics of population genomics in health delivery systems, economic burden of diseases and conditions	Massively parallel sequencing, 600K HapMap BeadChip, bioinformatics, tomography, morphometric analysis
Genome Alberta	Halloran, Philip Co-Leader: Mengel, Michael	University of Alberta	Establishing a molecular diagnostic system for kidney transplant biopsies	Human kidney transplant biopsies, molecular diagnostics	Microarrays, biostatistics, transcriptomics
Genome Alberta	Kenny, Louise Co-Leader: McEwan, Alexander	University of Alberta	Exploiting Metabolomics for Women's Health: Sensitive Screening and Personalized Prediction Using Biomarkers	Pregnancy outcomes, gynecological malignancy, biomarker discovery, disease pathogenesis, clinical phenotyping	Nuclear magnetic resonance, mass spectroscopy, computational biology, metabolomics, point-of-care technology
Genome Alberta	Kovalchuk, Igor Co-Leader: Hannoufa, Abdelali	University of Lethbridge	Generation of plants with new traits through epigenetic applications	Epigenetic transgenerational changes, canola plants with new traits, stress tolerant plants	Analysis of methylation and miRNA via bisulphate and deep sequencing, analysis of histone modifications and signaling via Chip-on-chip

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome Alberta	Kovalchuk, Igor Co-Leader: Laroche, Andre	University of Lethbridge	Improving water and nitrogen use efficiency in cereals for a changing environment	Nitrogen use efficiency, water use efficient and related stresses, enhanced CO ₂ fixation and carbon use efficiency, crop yield potential, plant phenotyping, genetic x environment interactions at the molecular and whole plant levels	Transcriptome, proteome and metabolome analyses, bioinformatics, comparative genomics, high performance plant phenotyping, VIGS, plant life cycle assessment
Genome Alberta	Larter, Steve	University of Calgary	Large scale biodegradation of coal as a route to methane and hydrogen enabling a fuel switch from coal burning to natural gas use.	Coal methanogenic biodegradation mechanisms; metabolic processes; key genes; key organisms; rate limiting steps; engineered process	Coal geochemistry; high resolution mass spectrometry; metagenomics; microbial ecology; engineering process design.
Genome Alberta	Moore, Stephen Co-Leader: Miller, Stephen	University of Alberta	Characterization of haplotypes and imputation of genotypes across purebred and commercial cattle.	Whole Genome Selection, Whole Genome Sequencing, High Density Genotyping, Genotype Imputation, Fertility, Nutrient Efficiency, Health	
Genome Alberta	Plastow, Graham Co-Leader: Kemp, Bob	University of Alberta	Application of genomics to improving swine health and welfare.	Swine Health, Immune Response, PRRS virus, Porcine Circo virus 2 (PCV2), Disease Resistance, Genetic Improvement, Genomic Assisted Selection, Vaccine Development	Disease Challenge, Disease Outbreaks, Next Generation DNA sequencing, High Density SNP Panels, Transcriptomics, Proteomics, Kinomics, Bioinformatics.
Genome Alberta	Power, Christopher	University of Alberta	The brain Microbiome in health and disease	Brain, metagenomics, Microbiome	Pyrosequencing, animal models, microbial cultures, real time RT-PCR, protein detection
Genome Alberta	Strelkov, Stephen Co-Leader: Borhan, Hossein	University of Alberta	Identifying clubroot resistance by deciphering the molecular basis of the <i>Plasmodiophora brassicae</i> -host plant interaction	Plasmodiophora brassicae, clubroot, Brassica, genomics, effectors	Next generation sequencing, transcriptome profiling, transient assay, protein-protein interaction, protein localization, gene silencing

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome Alberta	Tuszynski, Jacek Co-Leader: Marsh, Sharon	University of Alberta	Pharmacogenomics-based drug discovery	Pharmacogenomics, drug discovery, taxanes, oncology	Genotyping, bioinformatics, virtual screening, in vitro assays
Genome Alberta	Weselake, Randall Co-Leader: Bressler, David	University of Alberta	Biocatalytic Innovations for Bioproducts (BIP)	petrochemical alternatives, feedstock optimization, forest and agricultural biomass	gene discovery, sequencing, enzyme characterization, synthetic biology
Genome Alberta	Westaway, David Co-Leader: Dixon, Roger	University of Alberta	Functional Epidemiology and Epigenetics of Alzheimer's Disease	Alzheimer's, epigenetics, protein-based inheritance, somatic, neurodegeneration	Transgenics, reporter systems, compound screens, pathway analysis
Genome Alberta	Wishart, David	University of Alberta	The Food Metabolome Project		Metabolomics, Nutrigenomics, Bibliomics, Bioinformatics, Nutrition science
Genome Alberta	Wishart, David Co-Leader: Materi, Wayne	University of Alberta	Functional genomics of synthetic biological systems for carbon capture and recycling	Photoelectromethanogenic fuel cells, carbon capture and recycle, genetic engineering, metabolic engineering, physiological modeling	Transcriptomics, proteomics, metabolomics, metagenomics, synthetic biology
Genome Prairie	Bonham-Smith, Peta Co-Leader: Rosete, Yaima	University of Saskatchewan	Genomics and Proteomics of clubroot and aster yellows phytoplasma threatening canola and false flax production in Canada	Clubroot, Aster yellow phytoplasma, genomics, proteomics, Brassicaceae	Real-time PCR (RT-PCR); whole-genome shotgun technology; genome annotation; computational proteomic analysis; transmission electron microscopy.
Genome Prairie	Chibbar, Ravindra Co-Leader: Bai, Yuguang	University of Saskatchewan	Genomics of shrubs for oil sand reclamation in boreal forests	Boreal forest, shrubs, plant adaptation, reclamation, oil sand	High throughput DNA sequencing, Gene Expression assays, Genotype-environment interaction, Modeling shrub regeneration, Plant adaptation
Genome Prairie	El-Gabalawy, Hani Co-Leader: Wilkins, John	University of Manitoba	Minimizing the impact of rheumatoid arthritis in First Nations	Rheumatoid arthritis, proteomics, disease prevention, First Nations	Proteomic and transcriptomic analysis of biological samples; model building

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome Prairie	Eck, Peter Co-Leader: Jones, Peter	University of Manitoba	Identification of gene-diet interactions as determinants of human metabolic spectrum disorders -- cardiovascular events as proof of principle.	Genetic associations, metabolic syndrome, cardiovascular disease, gene-environment interactions, Nutrigenomics	Cohort study, extreme cases, GWAS, gene-environment interactions modeling
Genome Prairie	Eck, Peter Co-Leader: Jones, Peter	University of Manitoba	Genetics of dietary interventions efficacy in metabolic spectrum disorders.	Genetic associations, responsiveness variability, human dietary intervention trials	Next generation sequencing, clinical studies, bioinformatics of gene-diet interactions
Genome Prairie	Geyer, Ronald Co-Leader: DeCoteau, John	University of Saskatchewan	Development and Preliminary Clinical Validation of Cytokine Receptor Profiling of Cancer Stem Cells for Diagnostic and Therapeutic goals	Cancer Stems cells, Cell Surface Markers, Cytokines, Growth Factors, Chemokines, Cell Surface Receptors, CYCLIC Peptides, Biomarkers, Diagnostics, Therapeutics	Phage Display, Yeast Two-Hybrid Assay, Combinatorial Peptide Libraries, Cyclic peptides, High Throughput Sequencing, Fluorescence Activated Cell Sorting, Fluorescent Cell Imaging
Genome Prairie	Haakensen, Monique Co-Leader: Liver, Karsten	Saskatchewan Research Council	Profiling microbial communities associated with uranium mining and milling	Uranium mining and milling; Bioremediation; Environmental impact; Microbial and aquatic ecology; Adaptive management and mitigation	Metagenomics; Transcriptomics; Biogeochemistry; Synchrotron; Integrated multidisciplinary research
Genome Prairie	Hicks, Geoff	University of Manitoba	Cre-munity: Tissue specific conditional drivers for developing pre-clinical mouse models of inflammation-associated degenerative diseases and regenerative therapies.	In vivo mouse models, Inflammation-associated human disease and tissue degeneration, cell-based regenerative therapies, molecular targeted therapeutics, in vivo functional pathway reporters.	Gene targeting, mouse embryonic stem cells, transgenic technologies, in vivo phenotyping, recombinase-mediated conditional mutations.
Genome Prairie	Johnston, Mark Co-Leader: Van Rees, Ken	Saskatchewan Research Council	The use of genomics to assess the vulnerability of jack pine to climate change	Jack pine, climate change, population genetics, forest management, forest-dependent communities, forest industry	metabolomics, transcriptomics, hormone profiling, SNP, genome sequencing, quantitative trait loci

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome Prairie	Krause, Denis Co-Leaders: McAllister, Tim Bernstein, Charles N.	University of Manitoba	The rumen metagenome in human health and disease	Rumen microbiome, human microbiome, environment	
Genome Prairie	Leighton, Ted Co-Leader: Soos, Catherine	University of Saskatchewan	Identifying origins, predicting movement and understanding risk factors associated with emerging infectious diseases of wildlife in Prairie and Northern Canada	Emerging infectious diseases of wildlife, identify origins of diseases, predict movement of diseases, identify risk factors for infection, zoonotic diseases	Genomics, metabolomics, stable isotopes, modeling, epidemiology
Genome Prairie	Mai, Sabine	University of Manitoba	Three-dimensional (3D) cancer genome scanning	Cancer initiation and progression, Hodgkin's and related lymphoma, brain tumors, three-dimensional (3D) nuclear organization, telomeres	Quantitative imaging, 3D telomere imaging, 3D automated scanning, quantitative 3D software, diagnostic tool
Genome Prairie	Oresnik, Ivan J. Co-Leader: de Kievit, Teri	University of Manitoba	Characterization of the Plant Rhizosphere Microbiome	microbiome / rhizosphere / bioinoculant / biofertilizer / biocontrol	proteomics / transcriptomics / metabolomics / metagenomics
Genome Prairie	Pierce, Grant N.	St. Boniface Hospital Research/University of Manitoba	Nutriogenomic approaches for the modulation of inflammation and oxidative stress in patients with diabetes using Canadian flaxseed.	Type 2 diabetes, Inflammation and oxidative stress, Flaxseed, Human genome, Proteome	Micro array analysis and gene profiling; Proteomics, Flow-cytometry, ELISA, GC-MS
Genome Prairie	Potter, Andrew Co-Leader: Gerdts, Volker	University of Saskatchewan	Vaccinomics for Infectious Diseases of Animals	Emerging disease, vaccine, animal health, zoonoses, CL3	Proteomics, sequencing, kinome, recombinant DNA, immunization
Genome Prairie	Pozniak, Curtis Co-Leaders: Hucl, Pierre	University of Saskatchewan	Genomics Strategies to Improve Wheat Breeding in Canada	DNA Sequencing, Wheat, Crop Adaptation, Yield, End-use quality, Nutrition, Abiotic Stresses, Biotic stresses, Genotype by sequencing	Next generation DNA sequencing, allele mining, bioinformatics, phenomics

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome Prairie	Rysgaard, Soeren Co-Leader: Barber, David	University of Manitoba	GENICE: Genomics of Ice Environments	sea ice, glacial ice, microbial adaptation, bioremediation, cryopreservation	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	Stasolla, Claudio Co-Leader: Hill, Robert D.	University of Manitoba	Developing Enhanced Flooding Tolerance (DEFT)	Flooding tolerance, anaerobiosis, plant hemoglobins, root biology,	Transcript profiling, transformation, expression profiling, physiology, cell biology.
Genome Prairie	Vandenberg, Albert Co-Leaders: Sharpe, Andrew	University of Saskatchewan	LenGen - Canadian Lentil Genomics Initiative	Genome sequencing and targeted re-sequencing; transcriptomics; comparative genomics of Lens species; genotyping by sequencing; genome wide association studies (GWAS)	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	University of Ottawa	Starch regulomics	Starch Biosynthetic Enzymes; Binding Domains; Long-term storage of reduced carbon; Plastid carbon flux; carbon-use-efficiency	Mass spectrometry, iTRAQ Analysis, Bioenergy Biomarker Discovery by Mass Spectrometry, Starch excess mutants, Giant granule mutants (ssg1)
OGI	Bonetta, Dario Co-Leaders: Castonguay, Yves	University of Ontario Inst. of Technology	BioAlfa - Molecular Markers for Increased Value of Alfalfa	Alfalfa molecular breeding, abiotic stress tolerance, digestibility improvement, environmental contributions, biofuel feedstock development	Germplasm improvement, metabolomics, SNP array, high throughput phenotyping, marker assisted selection
OGI	Brown, Eric Co-Leaders: Meridith, Tim Roemer, Terry	McMaster	Chemical genomic investigations in Staphylococcus aureus	Chemical genomics, antibacterial discovery, Staphylococcus aureus, MRSA	

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	Brown, Stephen Co-Leader: Oleschuk, Richard	Queen's University	Advanced Biotechnology in Environmental Monitoring	environmental monitoring, drinking water, water resources, microbiological contaminants, protein biotoxins, automated detectors, on-site detection	microfluidics, biomolecular recognition, immobilized DNA, aptamers, optical biosensors DNA/RNA screening, DNA/RNA barcoding
OGI	Brudno, Michael Co-Leader: Scherer, Stephen	Hospital for Sick Children	Canadian Initiative in Medical Sequencing and Informatics (CIMS)	Genomics, Computational Biology, Personalized Medicine, Risk Prediction, Translational Diagnostics	Genome Sequencing, Medical Annotation, Genomic Structural Variation, Informatics, GE3LS
OGI	Campbell, Malcolm	University of Toronto	Broadleaf Forest Health Genomics Network	Broadleaf forest health, early diagnostics, "epitype" identification and induction, multiple stresses – pests, pathogens, drought, deployment of diagnostics and epitypes	Transcript profiling, high-throughput (next generation) sequencing, metabolomics, epigenomics, epigenetics
OGI	Charles, Trevor Co-Leader: McConkey, Brendan	University of Waterloo	Green Microbes for Carbon Capture and Bioproduction	cyanobacteria, CO2 capture, lipid production, biofuels, bioproducts	bioreactors, bioprospecting, metagenomics, synthetic biology, proteomics
OGI	Chen, Han Co-Leader: Matheson, Carney	Lakehead University	Jack pine health genomes	Jack pine, structural and functional genomics, proteomics and metabolomics, mountain pine beetles	metagenomics, metatranscriptomics, bioinformatics, microarray, genetic extraction and analysis, sanger sequencing
OGI	Christendat, Dinesh Co-Leader: Sain, Mohini	University of Toronto	Large-Scale Fungal Genomics for Utilization of Forest Biomass Residues	Genome Sequencing, Forest biomass residues for development of environmentally friendly products, Proteomic for protein identification and production, Bioconversion of Agricultural and Forest biomass residues, Biomaterials development and commercialization	Sequencing of Ophiostoma novouelmi, gel electrophoresis and mass spectrometry to identify relevant proteins, recombinant production of proteins for scale-up bioconversion of biomass residues, biotransformation of biomass and characterization of bioproducts using engineering approaches.

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	Danska, Jayne	Hospital for Sick Children	The Intestinal Microbiome in Type 1 Diabetes	T1 Diabetes, intestinal microbiome, gene-environment interactions, rodent models, mucosal immunology	metagenomics, transcriptomics, longitudinal cohort studies, proteomics, systems biology
OGI	Danska, Jayne Co-Leader: Keller, Gordon	Hospital for Sick Children	SIRPa-CD47 therapies to enhance and modulate stem cells (STEMs)	hematopoietic stem cells, leukemia stem cells, iPS cells, innate immune receptors, pre-clinical development, protein therapeutics development	mouse xenotransplant models, iPS, immunological assays, phos-flow proteomics, gene expression microarrays, therapeutic fusion proteins
OGI	Dekker, Robert Co-Leader: Matheson, Carney	Lakehead University	Metagenomic and metatranscriptomic investigation of decomposing forest litter: screening for enzymes with industrial applications (biofuels, foods and chemicals)	Metagenomics, microorganisms, diverse-environments, enzymes for biomass conversions, lignin modification	Genomic DNA extraction of decaying plant matter and forest soils, DNA sequencing, identifying genes, amplification of genes, cloning and expression in hosts, identification of enzymes, microbial physiology
OGI	Dumontier, Michael Co-Leader: Kennedy, Sean	Carleton University	Predictive Systems Toxicology	Environmental toxicology, toxicogenomics, systems toxicology, predictive systems	Semantic web technologies, database, function enrichment, network biology
OGI	Ekker, Marc Co-Leader: Waskiewicz, Andrew	University of Ottawa	Zebrafish for Envirogenomics	Pollutants, endocrine disruptors, functional genomics, animal models, biomarkers.	TILLING, Zinc Finger nucleases, mutagenesis, transgenic models.
OGI	El-Sohemy, Ahmed	University of Toronto	Integrated Nutrigenomics for Personalized Nutrition	Nutrigenomics, Personalized Nutrition, Genomics, Human Health	GWAS, Proteomics, Metabolomics, Biomarkers, Epidemiology
OGI	Ensminger, Ingo	University of Toronto	Diversity of drought responses of conifers to climatic change	adaptation and acclimation of trees to future climate, genomic tools to enhance the quality of Canada's forests, tree improvement, conservation strategies adapted to climate change	genotyping. Phenotyping, metabolite profiling, stable isotope discrimination, association genetics

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	Fan, Ming	University of Guelph	Metagenomic Mining of Porcine Gut Symbiotic Microbial Enzymes for Lignocellulose Degradation	Bioeconomy and environmental sustainable and renewable fuel; lignocellulosic bioethanol; dietary induction of pig gut symbiotic microbial genes; discovery of novel hemicellulases and cellulases; gene-centric metagenomic sequencing, assembly and characterization of microbial genes	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	Feng, Zhong-Ping Co-Leader: Holdway, Douglas	University of Toronto	Risk-based study to evaluate the potential effect of environmental contaminants on the epigenetics of the freshwater pond snail <i>Lymnaea stagnalis</i>	<i>Lymnaea stagnalis</i> , Japanese Medaka, epigenetics, aquatic toxicology, pollution	de novo gene sequencing, multimedia mass balance models, QSAR, bioinformatics, risk assessment
OGI	Finan, Turlough	McMaster University	Systems biology of how bacteria integrate carbon and phosphorous metabolism	Integration of Phosphate and Carbon Metabolism Bacteria	Transcriptomics, Metabolomics, Bioinformatics
OGI	Fulthorpe, Roberta	University of Toronto (at Scarborough)	Boreal Biodiversity Genome Project	Boreal forest, biodiversity, understory, carbon storage, nitrogen cycling	Roche 454 pyrosequencing, transcriptome analysis, metabolite analysis, functional gene analysis, metagenome
OGI	Gladman, Dafna Co-Leader: Rahman, Proton	University of Toronto	Genomics Studies in Spondyloarthritis: From Insights to Interventions	Auto-immune diseases, Ankylosing Spondylitis, Psoriatic Arthritis, Pharmacogenetics, Genotype/phenotype correlation	Genome Wide Association Studies, Copy Number Variation, Sequencing

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	Greenblatt, Ellen Co-Leader: King, Alan	University of Toronto	Towards Single Embryo Transfer in IVF: Application of single blastomere gene profiling, endometrial glandular cell gene profiling, and proteomics to identify clinical biomarkers of quality embryos and endometrial receptivity	In Vitro Fertilization, Single Embryo Transfer, Human reproductive health, Bovine IVF, Agriculture	Gene expression profiling, arrayCGH, NanoString, multiplex ELISA, mass spectrometry
OGI	Gupta, Bagwati Co-Leader: Selvaganapathy, P.Ravi	McMaster University	Monitoring and abatement of oil contamination using C. elegans	C. elegans, toxicology, environment and pollution, transgenics, microdevices and microfabrication	electrotaxis, genomics, genetics behavior and neurobiology, microfluidics
OGI	Hajibabaei, Mehrdad	University of Guelph	Biomonitoring 2.0: A high-throughput genomics approach for comprehensive biological assessment of environmental change	Environmental assessment, biodiversity analysis, metagenomics, molecular ecology	Next-generation sequencing, DNA barcoding, phylogenetics, bioinformatics
OGI	Hedley, David Co-Leader: Jurisica, Igor	University Health Network	Integrative approach to improving pancreatic cancer treatment, quality of life and survival.	Prognostic and predictive signature discovery; rational identification of individualized treatment	Genomics, proteomics, primary xenograft models, Integrative computational biology, clinical trials
OGI	Hegele, Robert Co-Leader: Blencowe, Benjamin	University of Western Ontario	Rnomics in Human Health and Disease	Transcriptome, gene regulation, biological networks, cardio-respiratory disease, neurological disease	High-throughput RNA sequencing, machine learning/algorithm development, network analysis, synthetic antibodies
OGI	Holden, Jeanette, Co-Leader: Lewis, M.E. Suzanne	Queen's University	Towards Optimal Development for People with ASDs, through Genomics, Phenomics, Proteomics, and Bioinformatics	Autism spectrum disorders, quality of life, genomics and phenomics, 3D facial imaging and family characteristics, environmental exposures, bioinformatics	Microarrays, next-generation sequencing, association studies, clinical and physical examinations, behavioural assessments
OGI	Kelvin, David	University Health Network	Identification of genetic elements that regulate adjuvant activity in human vaccines	Vaccines, Genetic Association, Signaling Pathways, Host Immune Responses, Infectious Diseases	Immune Activation, Genetic Association, Sequencing, RNA Seq, Systems Biology

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	Keshavjee, Shaf Co-Leader: Liu, Mingyao	University Health Network	Functional genomic assessments to improve graft survival after lung transplantation	Lung transplantation, Bronchiolitis obliterans, chronic graft dysfunction, 5-year survival	gene expression microarray, proteomics, microRNA assessment and bioinformatics
OGI	Krell, Peter Co-Leader: Bede, Jacqueline Seguin, Armand	University of Guelph	Genomics for the mitigation and detection of invasive forest pests: Emerald Ash Borer-Ash interaction	Invasive species, Insect plant interactions, functional genomics, next generation sequencing	Whole genome sequencing, in-vitro functional assays, expression profiling, metabolomic profiling, metagenomic analysis
OGI	Loeb, Mark Co-Leader: Bramson, Jonathan	McMaster University	Dengue Genomics	Dengue, epigenetics, transcriptional profiling, immunomics, human biology	NGS, high throughput DNA methylation, transcriptional profiling
OGI	Lui, Edmund Co-Leader: Brown, Daniel	University of Western Ontario	Systems biology approach to a forest-based ginseng cultivation system	Natural resource management, forest-based ginseng germplasm, agronomy, cultivation technology, bioactivity	Metabolomics, transcriptomics, genomic sequencing, systems biology-based pharmacology
OGI	Magarvey, Nathan Co-Leader: Anderson, Raymond	McMaster University	Bioprospecting for Bioactive Natural Products from Canadian Aquatic and Marine Environs	Bioactive marine natural products, polyketides, nonribosomal peptides, secondary metabolite gene clusters	Sustainable Bioprospecting, metabolomics, natural product gene clusters, chemoinformatics, bioactive small molecule mining
OGI	Mahadevan, Radhakrishnan Co-Leader: Martin, Vincent	University of Toronto	Large Scale Chromosome Engineering of Escherichia coli for Value-Added Bioproducts through the Construction of Synthetic Genomes	Synthetic Biology, Biochemicals, Metabolic Engineering, Chromosome Engineering, Systems Biology	
OGI	Mak, Tak Co-Leader: Bedard, Phillipe	University Health Network	Genome Wide Analysis of Cancer Drug Resistance	Cancer, targeted therapeutics, drug resistance, genomics	High-throughput sequencing, gene expression profiling, animal models
OGI	Master, Emma Co-Leader: Abou-Zaid, Mamdouh	University of Toronto	Boreal Forest FAB: Applied Genomics for Functionalized Fibre And Biochemicals	Bioeconomy, high-value forest products, synthetic enzymes, biomaterials, nutraceuticals	In silico and in vitro enzyme screens, transcriptome sequencing and quantification, high-throughput protein production, functional proteomics, enzyme engineering, bioassays, Life Cycle Assessment

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	McKerlie, Colin	Mount Sinai Hospital	Functional annotation of the genome for pre-clinical mouse models and therapeutic targets: Canada's contribution to the IMPC	Functional genomics, mouse models of human disease	Mutagenesis, mouse model creation, high-throughput phenotyping, imaging, pathology, in vivo drug target characterization, in vivo drug validation
OGI	McNeill, Helen Co-Leader: Zhen, Mei	SLRI, Mt. Sinai	Systematic functional analysis of ciliopathies: from model organisms to human disease	cilia development, cilia function, ciliopathies	mass spec., drosophila, C. elegans, RNAi screens, high-res imaging, GWAS
OGI	Moran, Michael Co-Leader: Tsao, Ming Sound	Hospital for Sick Children	Assays of Proteomics Signatures in Lung Cancer	Lung cancer, molecular therapeutics, biomarkers, mass spectrometry, xenograft, proteomics, protein signatures, clinical assay	Mass spectrometry, computational biology, tumor xenograft, clinical assay, selective reaction monitoring/multiple reaction monitoring (SRM/MRM)
OGI	Nam, Robert	Sunnybrook Health Sciences Centre	Genomics-Based Paradigm for Prostate Cancer Screening	Prostate cancer, screening, biopsy, genetics, biomarkers	Cohort study, nomograms, gene chips
OGI	Nazar, Ross Co-Leader: Robb, Jane	University of Guelph	A comparative 'omics database for plant vascular wilt disease	plant defense, gene expression, resistance, vascular wilt	genomics, proteomics, microarray, 2D electrophoresis, mass spectrometry
OGI	Palmer, Lyle Co-Leader: McLaughlin, John	OICR	Genomics and Chronic Disease Determinants in the Ontario Health Study	Population genomics, human health, chronic disease etiology and susceptibility, populatio health	genetic epidemiology, statistical genetics, next generation genomics, GWAS, prospective cohort
OGI	Paterson, Andrew	Hospital for Sick Children	Genomics of glycemic control in diabetes	T1 Diabetes, glycemia, advanced glycation endproducts, diabetic retinopathy, diabetic nephropathy	GWAS, NGS, quantitative trait, time-to-event, repeated measures
OGI	Petronis, Art	Centre for Addiction and Mental Health	DNA Methyloomics of Schizophrenia	Schizophrenia; epigenomics; heritability; brain; DNA modification	DNA; microarrays; next generation sequencing; medicinal chemistry
OGI	Pyle, Greg Co-Leader: Matheson, Carney	Lakehead University	Looking back through time: using resurrected Daphnia spp. to investigate the effect of environment perturbations on species evolution	ecotoxicogenomics, evolution, environmental impact of industry, indicator species	genomic sequencing, microarray analysis, resurrection of Daphnia spp., ecological testing

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	Regan, Sharon	Queen's University	POWER: Poplar Omics Widening Energy Resources	Activation tagging, bioenergy, biofuels, lignocellulosic, ethanol production, yeast, feedstock optimization, intellectual property, value chain optimization	Activation tagging, transcript profiling, next generation sequencing, proteomics, metabolomics
OGI	Roberts, Robert	University of Ottawa Heart Institute	Discovery of Rare Risk Variants for Coronary Artery by high throughput sequencing and determining function of rare and common variants	Genetics of Heart Disease	Genome wide DNA sequencing, cell culture, genome wide association studies
OGI	Rodd, Helen Co-Leader: Hughes, Kimberly	University of Toronto	Genomics of adaptation to rapidly changing environments and invasiveness	stress responses, climate change, invasive species, evolved and plastic adaptive responses, experimental model system	Next generation and third-generation sequencing, BAC libraries, experimental streams, genetic mapping, and gene expression analysis
OGI	Rogan, Peter Co-Leader: Knoll, Joan	University of Western Ontario	Single copy DNA diagnostic products and research tools for human and agricultural applications	Human molecular cytogenetics, chromosome condensation, livestock genomics, copy number variation, computational linguistics	Fluorescence in situ hybridization, array comparative genomic hybridization, bioinformatics, microfluidics
OGI	Rudnicki, Michael Co-Leader: Shoemaker, Dan	Ottawa Hospital Research Institute	High-throughput Signature-based Gene Expression Screening for Regenerative Medicine	Stem Cells; Regenerative Medicine; Tissue Repair; IND; Clinical Trial	Microarray; RNA-directed oligo Annealing, Selection, and Ligation; High throughput Screening; Preclinical Development; Biologics
OGI	Sidhu, Sachdev	University of Toronto	Synthetic antibody platform: commercial reagents and novel therapeutics	Cancer Therapeutics, Extracellular Receptors, Secreted Proteins, Signalling Pathways	Synthetic Antibodies, Phage Display, High Content Screening, Mass Spectrometry, Yeast Display
OGI	Siminovitch, Katherine	Mt. Sinai Hospital	Autoimmune disease genomics - from disease gene mapping to clinical practice	disease gene mapping, genomic medicine, autoimmune inflammatory disease, socioeconomic evaluation	NGS, genetic association analysis, computational algorithms

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	Singh, Shiva Co-Leader: Gloor, Gregory	University of Western Ontario	Twin Genomics: A Novel Framework for Health and Disease	Complex disease, monozygotic twins, discordance, schizophrenia, genetics, epigenetics	Complete genome sequence, development of database, data access, bioinformatics, genetics analysis, genetic and epigenetic difference, <i>de novo</i> mutation detection
OGI	Somers, Daryl	Vineland Research and Innovation Centre	Environmental Impact Reduction of Horticulture Production through Novel Plant Genetics	Mutagenesis, genetics, environmental traits	EMS mutation, next-generation sequencing, high-resolution DNA melting, controlled environment
OGI	Stintzi, Alain Co-Leader: Mack, Dave	University of Ottawa	Longitudinal contribution of the gut microbiota in pediatric inflammatory bowel disease	pediatric IBD, gut microbiome, children, host-bacteria interactions, crohn's disease and ulcerative colitis	metagenomics, metatranscriptomics, metaproteomics, metabolomics, systems biology
OGI	Taylor, Michael Co-Leader: Marra, Marco	Hospital for Sick Children	Pediatric medulloblastoma cancer genetics	Pediatrics, brain cancer	Cancer genome sequencing, transcriptome profiling, bioinformatics
OGI	Thorsteindottir, Halla Co-Leader: Seguin, Beatrice	University Health Network	Fostering Global Partnerships in Health Genomics: Capitalising on the Canada-Emerging Economy Collaborations in Research and Innovation	innovation, genomics, health biotechnology, commercialization models, regulation, global health, collaboration	qualitative research methodology, quantitative methodology, bibliometrics/scientometrics, statistical modeling and network analysis
OGI	Wen, Xiao-Yan Co-Leader: Rotstein, Ori Zon, Leonard Ekker, Stephen	St. Michael's Hospital	Rapid Drug Discovery in Cardiovascular and Infectious Diseases by Zebrafish Functional Genomics Approaches	Functional genomics, cardiovascular diseases, infections, drug development, zebrafish	Chemical genetic screen, gene trapping, mutagenesis, zebrafish, high throughput
OGI	Weretilnyk, Elizabeth Co-Leader: Cameron, Robin	McMaster University	Molecular profiling to design crops with improved tolerance to adverse environments	environmental stress tolerance, drought tolerance, nutrient stress	deep transcriptome sequencing, bioinformatics, metabolomics

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
OGI	White, Bradley Co-Leader: Wilson, Paul	Trent University	Landscape Genomics: Assessment of the impact of landscape and climate change, disease stressors and invasive species on genome structure and function in ecosystems	Landscape genomics, functional genes, climate change, hybridization, disease stressors	genome sequence, functional gene expression, physiological performance, SNPs, metagenomics
OGI	Wong, Albert Co-Leader: Warsh, Jerry	Centre for addiction and mental health (CAMH), U Toronto	Identifying biomarkers for psychiatric disease	Schizophrenia, depression, bipolar disorder, psychiatry, biomarkers	Microarray, genomics, transcriptome, proteomics, biopsy
OGI	Xing, Tim Co-Leader: Laroche, Andre	Carleton University	Sustainable broad-spectrum resistance to pathogens across commercial crop species	Disease resistance, innate immunity, genetic improvement of commercial crops, pathway manipulation, bioinformatics, transcriptome plasticity	transcriptome assembly, T-DNA activation-tagged populations, comparative genomics, bioinformatics, genetic pathway modulation, transgenics, RNAi/VIGS in monocots and dicots
Génome Québec	Abou Elela, Sherif Co-Leader(s): Chabot, Benoît	Université Sherbrooke	Splice variants essential for tumor metastasis	Genomics, alternative splicing, cancer metastasis, tumor progression, invasion	Functional genomics, transcriptome profiling, oncogenomics.
Génome Québec	Ahmad, Ali	U de M	Mining viral genomes for novel molecules	Apoptosis, Autophagy, Cell cycle, Immune modulation, Viral genes, Viral genomes	Bioinformatic algorithms, Data mining tools, Discovery of novel therapeutics
Génome Québec	Antoun, Hani Co-Leader(s): Finan, Turlough	Université Laval	Arctic Rhizobium low Temperature Adaptation and Nodulation properties (ARTAN)	Arctic Mesorhizobium, cold adaptation, symbiotic efficiency, cold shock protein, nodulation genes	Cold adaptation genes, nodulation genes, genome sequencing, low temperature physiology, gene knock-out.
Génome Québec	Awadalla, Philip Co-Leader(s): Parker, Louise	U de M	Identification of molecular and environmental control points associated with fat-related quantitative traits and related chronic diseases: development of clinical diagnostic tools and their legal/ethical/economic evaluation	Biomarker of metabolic traits, environmental interactions, population cohorts, chronic diseases, ethics/legal, public health.	Next-generation sequencing, computational biology, statistical modeling, epidemiology.

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Génome Québec	Bergeron, John J.M. Co-Leader(s): Nilsson, Tommy	RI-MUHC	A Translational Approach to Combat Liver Disease	NASH, NAFLD, Diabetes, Obesity, Transcriptomics	Quantitative organelle proteomics, Bioinformatics, GE ³ LS, Economic model of clinical and cost projections, Population models for Quebec and Canada
Génome Québec	Bergeron, Michel G. Co-Leader(s): Rodrigues, Manuel	Université Laval	The microbia and microbiome of potable water- A source of opportunity for Québec and Canada	Drinking water molecular microbiology, fecal contamination indicators, culturable and non culturable microbiome, gastrointestinal disease risk assessment	Bioinformatics, genome sequencing, metagenomics, whole genome application, genomic biomarkers
Génome Québec	Brown, Gregory	McGill	Genomics for Optimized Environmental Performance of Biodiesel Crops	Biodiesel, oilseed, gene traits, trait development, yield increase	Gene association mapping, chromosomal identification, next-generation sequencing, epigenetics
Génome Québec	Coulombe, Benoit Co-Leader(s): Greenblatt, Jack	IRCM	Towards a comprehensive map of the human interactome	Human interactome; epigenetics; gene regulation; protein modifications; nucleus	Mass spectrometry; affinity purification; laboratory information management systems; computational biology
Génome Québec	Desrosier, Martin Co-Leader(s): Rousseau, Simon	CHUM	TLR signalling dysfunction in the development of inflammatory airway disease	Inflammatory airway disease, epigenetic regulation of gene function, innate immunity, TLR signaling in epithelial cells, bacterial genomics	Genotyping, whole-genome sequencing, methylation assay, epithelial cell culture, microarray analysis of gene expression
Génome Québec	Dubé, Laurette Co-Leader(s): Yada, Rickey Y.	McGill	Brain-to-Society (BtS) Diagnostic Project - Healthy Eating: An integrated GE ³ LS Initiative to Increase Innovation, Competitiveness and Economic Sustainability of Canadian Agri-food and Health in the Digital Economy.	sensory genomics, dopamine systems, food innovation, chronic disease prevention, knowledge architecture	computational systems sciences, endophenotype, ontology, strategic innovation

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Génome Québec	Gaudet, Daniel	U de M	The Sedna-ECOGENE-21 Biobank: development of markets for human ecosystem services and global management of biodiversity	Biodiversity; Ecosystem; Environment; System Biology; Human Health	Biobank; Bar Coding; Nanotechnology
Génome Québec	Guichard, Frederic Co-Leader(s): Bureau, Thomas	McGill	Genomic indicators of ecosystem health	Ecosystem dynamics; ecosystem services; ecosystem monitoring; environmental stress;	Metagenomics; bioinformatics; biostatistics; ecoinformatics; RNA sequencing;
Génome Québec	Lang, B. Franz Co-Leader(s): Hijri, Mohamed	U de M	Improving Bioremediation of Polluted Soils Through Environmental Genomics	Bioremediation; Willow; Poplar; Microbial, environmental and fungal genomics; Soil biology; Mycorrhizal fungi.	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	Levesque, Roger C. Co-Leader(s): Cusson, Michel	Université Laval	BEGAB: Budworm EcoGenomics: Applications & Biotechnology	Ecogenomics of budworm food-webs, molecular markers, insect dispersal, decision support systems, pest-control product development	genome sequencing, DNA bar-coding, SNP discovery, microarray analysis, ecological modeling
Génome Québec	MacKay, John Co-Leader(s): Bohlmann, Joerg	Université Laval	Spruce Genomics: Genetic Management and Breeding Tools for Productive Forests and a Sustainable Industry	Spruce trees, forest productivity and health, insect resistance, wood quality and yield, genetic diversity.	High-throughput genotyping, association genetics, genomic selection, functional genomics, genome sequencing.
Génome Québec	Martin, Vincent Co-Leader(s): Mahadevan, R.	Concordia	Large Scale Chromosome Engineering of <i>Escherichia coli</i> for Value-Added Bioproducts through the Construction of synthetic genome	Synthetic, Biology, Biomedical, Metabolic Engineering, Chromosome Engineering, System Biology	Genome sequencing, Large scale genome synthesis, Large scale genome deletions and insertions

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Génome Québec	Phillips, Michael S. Co-Leader(s): Tardiff, Jean-Claude	ICM	Point-of-Care Medical Dx Sequencing: Development of Rapid and Cost-Effective Clinical Assays using Next-Next Generation Sequencing Technologies (GnuBio).	Medical Diagnostic Next Generation Sequencing, Whole Genome	Next-Next Generation Sequencing, Diagnostics, Medical Bioinformatics
Génome Québec	Polychronakos, Constantin	McGill	Somatic mutations in complex phenotypes relevant to human health: A consortium approach	Somatic mutation, bone density, autoimmune, mosaicism, clonal	Whole-genome sequencing, twins, deep sequencing, lymphocytes, cell cloning
Génome Québec	Quessy, Sylvain Co-Leader(s): Fravalo, Philippe	U de M	Assessment of impact of feed additives on the diversity and evolution of gut and environment microbial community	Animal production / antimicrobial resistance / heavy metals / microbial ecology / virulence determinants	Capillary Electrophoresis PCR-SSCP / PCR-DGGE / virulence and antibioresistance genes probes design / HIS-Hydrophobic Grid Membrane Filtration GMF / in situ hybridization / profile analyzing - Gene Mapper-Bionumerics
Génome Québec	Rioux, John D. Co-Leader(s): Lettre, Guillaume	ICM	Genomic medicine of complex traits – improving our understanding of disease for developing diagnostic tools and therapeutic targets	Inflammation, integrative biology, bioinformatics, proteomics	Sequencing, association, high-content screening, functional genomics
Génome Québec	Rouleau, Guy A. Co-Leader(s): Rousseau, François	U de M	Molecular Diagnosis of Neurological Disorder using Next-generation sequencing	diagnostics, sequencing, genome-wide, neurological disorders, health technology assessment	next-generation sequencing, bioinformatics, patents, health economics, medicine
Génome Québec	Rousseau, François	Université Laval	Streamlining the Translational Pipeline of Genomic Innovations to HealthCare (Largescale GE3LS project)	Tools for translation of genomic discoveries into medicine; Genomics applications and population screening; Genomic services and system organization; Knowledge translation of genomics innovations; Genomics and personalized medicine	Evidence-based genomic medicine; Health economics; Health technology assessment; Implementation research; Health services research, Health policy research

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Génome Québec	Sauvageau, Guy A. Co-Leader(s): Hébert, Josée	IRIC- U de M	The leucegene project: Transcriptome sequencing to identify novel prognostic and therapeutic targets in acute myeloid leukemia	Acute leukemia, Novel prognostic markers, cancer genomics	RNA-sequencing, transcriptome, bioinformatics
Génome Québec	Secko, David Co-Leader(s): Avard, Denise	Concordia	GenMarket: Deliberations on Direct-to-Consumer and Marketplace Genomics	personal genomics; direct-to-consumer testing; biobanking; public engagement; policy impact	GE ³ LS; deliberative engagement; comparative studies; dialogue methodology development; policy testing
Génome Québec	Sheppard, Donald Co-Leader(s): Whiteway, Malcolm	McGill		Antifungal, aspergillus fumigatus, Synergy	High throughput screening, mechanism of action
Génome Québec	Shore, Gordon Co-Leader(s): Tremblay, Michel	McGill	Therapeutic Development platform: Targeting metabolism in cancer	Metabolism, oncology, personalized medicine, biomarkers	Synthetic lethality, sh and siRNA screening
Génome Québec	Singh, Jawsinder Co-Leader(s):	McGill	Exploring the Jerusalem Artichoke genome for human health	Genomics, SNPs, Bioproducts, ESTs, Cholesterol, Diabetes	Sequencing, metabolomics, proteomics, molecular biology, immunology
Génome Québec	Tardiff, Jean-Claude Co-Leader(s): Dubé, Marie-Pierre	ICM	Integrated biomarkers of atherosclerosis and plaque instability	Biomarkers, whole-genome sequencing and genotyping, microRNAs, metabolomics	Next-generation sequencing, genome-wide genotyping, microRNA analysis, mass spectrometry-based metabolomics, imaging
Génome Québec	Thomas, David Co-Leader(s): Hanrahan, John	McGill	Systems Biology of Cystic Fibrosis	Protein folding diseases; Cystic fibrosis; Therapeutics development	siRNA genome wide screens, Transcriptional profiling
Génome Québec	Tsang, Adrian Co-Leader(s): Deng, James	Concordia	Forest products genomics	wood-inhabiting fungi; forest products development; biocontrol agents; bioadhesives; economic impact	genomics; transcriptomics; exo-proteomics; database development;
Génome Québec	Villemure, Richard Co-Leader(s): Lau, Peter C.K.	INRS-IAF	Beaver Gut Metagenomics and Metabolomics: Providing Options and Solutions to Canadian Forest Sustainability through Bark Valorization	Wood bark, biochemicals (sugars, phenolic acids), lignocellulose degradation, enzyme evolution, microbial diversity	Metagenomics, metabolomics/NMR, bioinformatics, high throughput screening, enzyme assays

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome Atlantic	Archibald, John Co-Leader(s): Reith, Mike	Dalhousie University	Genetics and Genomics of ONC T18B for Bio-fuels	Biofuels, Alternative Energy, Microorganisms, Algae-to-Biofuels	Genomics, Transcriptomics, Genetics, Bioinformatics, Metabolic Profiling
Genome Atlantic	Bentzen, Paul Co-Leader(s): Bowman, Sharen	Dalhousie University	Genomic Tools for Traceability and Sustainability of Seafood	Genomic and Transcriptomic Sequencing, Genetic Marker Development, Populations Genetics, Seafood Traceability, Geographic Variation	Next Generation Sequencing, Bioinformatics, Single Nucleotide Polymorphism (SNP) Identification, SNP Genotyping, Marker Panel Development and Testing
Genome Atlantic	Bowman, Sharen Co-Leader(s): Johnston, Mark	Dalhousie University	Sugar Maple Genomics: Securing the Health and Productivity our Maple Forests	Climate Change, Forest Management, Flavour Pathway Analysis, Anti-Oxidant Pathway Analysis, Metabolomics	Second Generation Sequencing, Marker Identification, Genotyping Annotation, Comparative Genomics
Genome Atlantic	Caldwell, Claude Co-Leader(s): Parkin, Isobel	Nova Scotia Agricultural College	Developing Camelina as the Next Canadian Oilseed	Genetical Genomics, Genetic Mapping (Comparative Genomics), Agronomic Improvement, Reverse Genetics, Market Development	Next Generation Sequencing, High Throughput SNP Analysis, Microarray Analysis, TILLING, Bioinformatics
Genome Atlantic	Carr, Steven Co-Leader(s): Marshall, H. Dawn	Memorial University	Biodiversity Genomics: "NextGen" Sequencing for Non-model Multi-species Environmental Biology	Species-at-Risk, Population Genomics, Phylogenomics, Mitogenomics, Non-model Species	NextGen Sequencing, Microarray Iterative Sequencing, Real-time Environmental Genetics, Bioinformatics
Genome Atlantic	Greenwood, Spencer Co-Leader(s): Cawthorn, Richard	University of Prince Edward Island	Immunogenomic Strategies for Improved Commercial Aquaculture Practices	Crustacean Health, Host Response to Pathogen, In Vitro Validation Models, Evaluation of Bioactives for Potential to Enhance Crustacean Immunity	Bioinformatics, DNA Microarray, PCR Array, Mass Spectrometry, DNA Sequencing
Genome Atlantic	Koop, Ben Co-Leader(s): Fast, Mark	University of Prince Edward Island	Cutting Edge Genomic Approaches to Resolving Sea Lice Issues (CEGARSLI)	Resistance, SNPs, Host Immunity, Sea Lice, Salmon	SSH, SNP Microarray, Risk Models, qPCR, Sequencing
Genome Atlantic	McMaster, Chris Co-Leader(s): Fernandez, Conrad	Dalhousie University	A Treatment for Myelodysplastic Syndromes and Establishment of a Drug Target Identification Platform	Human Genetic Disease, Genetic Models of Disease, Drug Targets, Drug Development, Disease Diagnosis	Exome Sequencing using NGS, Microarrays, Yeast Synthetic Genetic Arrays, Zebrafish Trans-genetics

Centre	Project Leader(s)	Lead Organization	Title	Research Area	Methodologies
Genome Atlantic	Ouellette, Rodney Co-Leader(s): Doucette, Alan	Atlantic Cancer Research Institute	The Populomix Pancreatic Cancer Early Detection (PCED) Project	Pancreatic Cancer, Genetic Predisposition, Biomarker Discovery & Validation, Molecular Characterization of Early-stage PC Progression	Proteomics, Transcriptomics, Metabolomics, Animal Models, Epidemiology
Genome Atlantic	Parfrey, Pat Co-Leader(s): McLaughlin, John	Memorial University	Genetic Determinants of Colorectal Cancer and Translation of Discoveries to Improve Populations Health: A Joint Newfoundland-Ontario Team Approach	Genetic Epidemiology, Gene Discovery, Colorectal Cancer, Translation, Familial Population Based CRC screening, GE ³ LS	Exome Sequencing, Population Based Linkage Analysis, Genome Wide Association Study, DNA Methylation profiling, Diagnostic Mutation Panel - A Provincial Community Based CRC Control Strategy in High Risk Families
Genome Atlantic	Rajora, Om	University of New Brunswick	Forest Trees Response and Adaptation to Climate Change	Climate Change Response and Adaptation; Structural, Functional and Populations Genomics; Ecophysiology and Biochemistry; Spruce; Differential Gene Expression	Differential Gene Expression Profiling; Whole Transcriptome Sequencing; SNP Discovery and Association Mapping; Physiology and Biochemical Analyses; Bioinformatics
Genome Atlantic	Rajora, Om	University of New Brunswick	Forest Bioproducts Genomics	Fabric-fiber; Growth and Carbon Sequestration; Structural, Functional and Population Genomics; Plant Biochemistry; Populars	Interspecific Breeding and Non-Transgenic Induced Mutagenesis; Whole Transcriptome and Whole Genome Massive Parallel Sequencing; SNP Discovery and Association Mapping; Bioinformatics; Physiology and Biochemical Analyses
Genome Atlantic	Rise, Mathew Co-Leader(s): Robinson, Andy	Memorial University	Genomics Research to Improve Cod Production (GRIP Cod)	Elite Atlantic Cod Production, Marker Validation, Overcoming Early Maturation, Growth Optimization, Disease Resistance	Development of Reference Genome, SNP Discovery, Functional Genomics, Metagenomics, QTL Development
Genome Atlantic	Young, Terry Co-Leader(s): Pullman, Daryl	Memorial University	Lost in Translation: Using ARVD as a Model to Bridge the Gaps to Personalized Medicine	Personalized Medicine, Sudden Cardiac Death, Public Health and Privacy, Issues of Consent, Gene Discovery	SNPs, Copy Number Variation, Direct Population Sampling, Focus Groups, Next Generation Sequencing