The Charles Bronfman Institute for Personalized Medicine

Mount Sinai’s strategic plan provides a road map for major investments in research and infrastructure to establish a series of new Institutes, including The Charles Bronfman Institute for Personalized Medicine (IPM). The Institute is dedicated to advancing personalized health and health care with three core objectives:

• Provide clinical and translational investigators with greater and easier access to high quality, standardized biospecimen collections, linked with full clinical information.
• Provide an academic research home and technology support for discovering clinically important genotype-phenotype associations through interdisciplinary, translational genomics programs.
• Facilitate clinical development of gene-based diagnostics and risk assessment algorithms and evaluate their impact on health care delivery at the patient and population level.

IPM is home to research faculty pursuing studies in the clinical areas of pharmacogenomics, obesity and metabolic traits, cardiovascular and kidney disease. Institute faculty generates innovations and new paradigms in mapping of complex traits in diverse populations, clinical knowledge representation and phenomics, and personalized medicine clinical decision support. Headed by Dr. Judy Cho, IPM provides full and sole support for the IPM BioMe Biobank Program including the Biobank Informatics and Genomic Data Analysis Services Center (BIGDASC).

BioMe™ Biobank Program

To discover better treatments, researchers are seeking to unravel the complexity of disease at the most basic level through “molecular” studies. The donation of samples from many thousands of individuals is essential to such studies. BioMe is a biobank program of the Charles Bronfman Institute for Personalized Medicine at Mount Sinai. BioMe is dedicated to advancing the application of human blood-derived biospecimen and clinical data to life science research to accelerate the development of personalized healthcare and medical solutions.

Since September 2007, over 33,000 Mount Sinai Health System patients have enrolled in the Electronic Medical Record-linked BioMe Biobank Program. It is designed to generate a large collection of DNA and plasma samples, and phenotypic (questionnaire-based and EMR-linked) and genomic data, that are stored in a way that protects patient’s privacy. The three major self-reported racial/ethnic populations include 32% EA (European Ancestry), 24% AA (African Ancestry, 35% HA (Hispanic Ancestry). At the same time, it enables research to be performed on de-identified, comprehensive, electronic clinical information extracted from the Mount Sinai Data Warehouse (MSDW).

IPM represents Mount Sinai as a member site to several large NIH-funded research networks, including the IGNITE Implementing GeNomics In pracTicE Network, Population Architecture Using Genomics and Epidemiology (PAGE), Phase II, eMERGE II Network (electronic medical records and genomics), the eMERGE-Pharmacogenetics Research Network (PGRN) research partnership, the CKD Biomarker Consortium, among others.

The BioMe Biobank Program contributes under collaborative agreements with international research consortia and collaborations, including:

• GIANT (Genetic Investigation of Anthropometric Traits) – GWAS data contributed for discovery analysis for anthropometric traits from all BioMe™ participants and workgroup participation
• COGENT BP (Continental Origins and Genetic Epidemiology Network) – GWAS data for BP from African American BioMe™ participants contributed for discovery analysis
• GHBP (Genomics in Hispanics for Blood Pressure) – GWAS data for BP from Hispanics contributed for discovery analysis
Massachusetts Institute of Technology Computer Science and Artificial Intelligence Laboratory (John Guttag): Predictive Modelling and Personalized Health Decision Support Tools

- Genetics of Obesity and related traits in African Americans – GWAS data of BMI from African Americans BioMe™ participants contributed for discovery and follow up analysis and workgroup participation
- African American Type 2 Diabetes Genetics Consortium – GWAS data of T2D from African American BioMe™ participants contributed for analysis
- CHARGE (Cohorts for Heart and Aging Research In Genomic Epidemiology) – Exome chip data contributed for analysis of BP from all BioMe™ participants
- CKDGen (CKD Genetics Consortium) – GWAS data contributed for discovery analysis and workgroup participation
- CKDGen (CKD Genetics Consortium) – Exome chip data contributed for analysis of BP from all BioMe™ participants
- GLGC (Global Lipids Genetics Consortium) – Exome chip data contributed for discovery analysis of all lipids from all BioMe™ participants
- GLGC (Global Lipids Genetics Consortium) – Exome chip data contributed for follow-up analysis of CAD from all African American BioMe™ participants
- ESP-LDL (Exome Sequencing Projects LDL Cholesterol) – Exome chip data contributed for follow-up analysis of LDL from all BioMe™ participants
- MAGIC (Meta-Analyses of Glucose and Insulin-related traits Consortium) – Exome chip data contributed for discovery analysis of HbA1c from all BioMe™ participants
- CHARGE (Cohorts for Heart and Aging Research In Genomic Epidemiology) – Exome chip data contributed for discovery analysis of Glycaemic traits from all BioMe™ participants
- CHARGE (Cohorts for Heart and Aging Research In Genomic Epidemiology) – Exome chip data contributed for follow-up analysis of Amyloidoses from all BioMe™ participants
- TranscenD (TRANS-ethnic Evaluation of vitamin D) – GWAS data contributed for discovery analysis of Vitamin D from all BioMe™ participants.
- Lipids in HA – GWAS data contributed for discovery analysis of Lipids from all Hispanic American BioMe™ participants.
- DIAGRAM+ and GOT2D (Genetics of Type 2 Diabetes) – GWAS data contributed for follow-up analysis of T2D from all BioMe™ participants.
- BP in HA GWAS data contributed for discovery analysis of BP from all Hispanic American BioMe™ participants.
- ICBP (International Consortium for Blood Pressure) – GWAS data contributed for discovery analysis of BP from all European American BioMe™ participants.
- Anthropometric Traits in HA – GWAS data contributed for discovery analysis of Anthropometric Traits from all Hispanic American BioMe™ participants.
- T2D Genes – Targeted sequencing for follow-up analysis of T2D from all European American BioMe™ participants.