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Innovative Genomic Applications to Develop Clinical Biomarkers and Novel Therapies for Common Iron Metabolism Disorders

Status	Current
Competition	Applied Genomics and Proteomics Research in Human Health
Sector	Health
Genome Centre	Genome British Columbia
Project Leader	Paul Goldberg

Project Description

Excess iron accumulation in the body causes widespread organ damage. Iron overload disorders including Hereditary Hemochromatosis (HH) and transfusion-related causes of iron overload as occurs in Thalassemia, are known causes of significant morbidity and mortality. HH leads to organ failure and secondary problems such as diabetes, liver cirrhosis, heart disease, arthritis and depression. The primary goal of this project is to deliver innovative clinical approaches that will transform the way we treat disorders of iron metabolism.

“This project addresses the opportunity to treat and prevent important chronic diseases,” states Dr. Goldberg. “Our focus is to develop improved diagnostics, screening and therapeutics that will have a significant impact on the treatment of patients with iron overload disorders. This will enable physicians to predict the onset of iron overload conditions and prevent the damage that it can cause.”

This expert group is studying three main areas of iron metabolism research:

Identify new genes to better define the role of iron in disease pathogenesis: Large-scale genomics research will identify new genes related to iron metabolism in order to explain their role in disease progression.

Develop clinical tests to diagnose diseases relating to iron overload: The new genes will be used to understand the biological relationships between different iron genes and proteins and to identify genetic markers to better predict the severity and outcome of a patient's iron overload. These diagnostic tests will improve awareness and screening for families and at-risk individuals. The tests will also allow physicians to manage each patient with more appropriate personal treatment.

Develop an oral therapeutic to reduce iron overload in the body: Xenon is developing an oral therapeutic that will effectively reduce iron overload in the body and prevent organ damage. Xenon's therapeutic will improve the clinical management of patients with iron overload disorders.

With additional public outreach and medical awareness through association with the American and Canadian Hemochromatosis Societies, and the creation of improved screening and treatment options, the Innovative Genomic Applications to Develop Clinical Biomarkers and Novel Therapies for Common Iron Metabolism Disorders project will help position Canada as an international leader in detecting and treating these common genetic conditions.