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## Better Biomarkers of Acute and Chronic Allograft Rejection

<b>Status</b>	Current
<b>Competition</b>	Applied Genomics and Proteomics Research in Human Health
<b>Sector</b>	Health
<b>Genome Centre</b>	Genome British Columbia
<b>Project Leaders</b>	Paul Keown, Bruce McManus & Robert McMaster

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### Project Description

#### *Reducing transplant organ rejection through the power of genomics*

Patients with end-stage vital organ failure depend on transplantation to save their lives. But transplantation is far from failsafe. Because the process involves introducing a foreign organ into the recipient, the recipient's immune system may react to the new organ. Ironically, immune cells that protect the patient by recognizing, attacking and destroying foreign antigens like those of microbes can cause rejection and dysfunction in the very organ intended to save a patient's life.

Individuals vary in their response to immunosuppression therapy. The Better Biomarkers of Acute and Chronic Allograft Rejection project will use the most advanced genomic, proteomic and bioinformatic tools to better understand this variation in order to produce an inexpensive, non-invasive and accurate test to determine whether rejection is occurring, and how a patient can expect their transplanted organs to perform. This research combines the knowledge of many of Canada's foremost experts in transplantation immunology, pathology, biochemistry, statistics, computer science and clinical care. The research team will focus in particular on patients who have undergone liver, heart or kidney transplants.

Understanding the different responses patients have to immunosuppressive therapy will help physicians and nurses balance the necessity of the therapy with its possible side-effects. Personalized immunosuppressant therapy will not only alleviate patient discomfort and undesirable side-effects, but reduce the enormous economic burden of over-prescribing immunosuppressive drugs. And being able to monitor and predict rejection using a simple blood test will significantly reduce intrusive and expensive diagnostic procedures.