

Canada Research  
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## Peter Rogan

Canada Research Chair in Genome Bioinformatics

The University of Western Ontario  
Tier 1 - October 1, 2008  
Health

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### Website

[http://www.cytognomix.org/public\\_html](http://www.cytognomix.org/public_html)

### Coming to Canada from

University of Missouri, USA

### Research involves

Applying novel methods to detect and interpret disease-causing genetic variants

### Research relevance

Leading to better prediction and personalization of genetic diagnoses

### Predicting the Future and Saving Lives with DNA

We each carry thousands of subtle genetic variations that distinguish us from everyone else. Some influence our hair colour, eye colour and height. But others influence factors like our predisposition to certain diseases and their symptoms, our response to therapies or the extent to which our genes are expressed.

Canada Research Chair in Genome Bioinformatics, Dr. Peter Rogan, and his team are developing new ways to identify and interpret these variations so patients can get personalized, individual molecular diagnoses and possibly avoid or fight disease.

This personalized molecular diagnosis has the potential to reveal details about our individual natural histories of disease and responses to therapy, both earlier and more precisely than previously possible, giving more patients an opportunity to overcome disease.

Rogan's bio-informatic tools, used to collect or analyze complex biological information, are helping researchers understand and predict the severity of diseases based directly on the DNA sequences of genetic mutations. His software evaluates the impact those variations have on a particular sequence of genes—a sequence that affects how and how much certain other genes are expressed. Rogan's team will conduct a comprehensive analysis of many

common sequence variants by using mathematical models designed to predict which of these are abnormal. They will follow up on prospective mutations in collaboration with investigators at The University of Western Ontario and other research institutions.

With Dr. Joan Knoll, Rogan has also developed “single-copy DNA probe technology”—a technology used to diagnose human congenital and acquired genetic disorders such as leukemia. The probes can precisely analyze abnormalities in chromosomes, looking in on the genetic world with unprecedented resolution. Rogan’s project will use the DNA probes to study patients with congenital abnormalities and cancer. His laboratory’s long-term goal is to introduce these DNA probes into clinical laboratories, with the hope of eventually making the technology available to patients throughout Canada and the world.