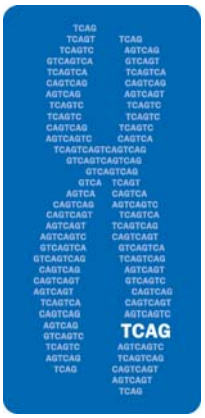
THE CENTRE FOR APPLIED GENOMICS



The Centre for Applied Genomics (TCAG) is dedicated to conducting and promoting groundbreaking research in genomics, including service and training support for academic, government, and private sector scientists worldwide.

Founded in 1998 by Lap-Chee Tsui and Stephen Scherer, TCAG is now directed by Dr. Scherer, with support from an international Scientific Advisory Board and an integrated scientific management team. A key mandate has always been to help keep Canadian projects in Canada.

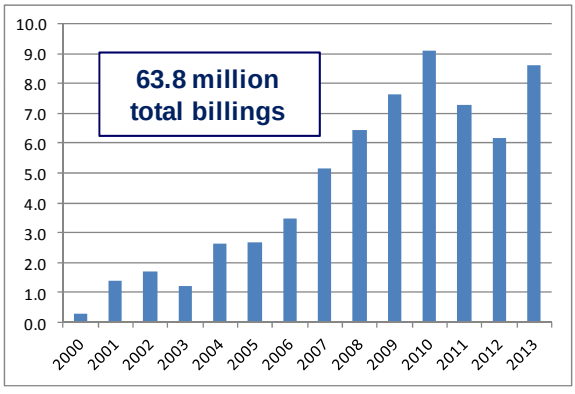
TCAG performs laboratory experimentation, data interpretation, bioinformatics support, and project consultation on a first-come/first-served, fee-for-service, cost-recovery basis. The Centre is supported by:

- The Canada Foundation for Innovation (CFI)
- The Government of Ontario's Ministry of Research and Innovation (MRI)
- Genome Canada, through the Ontario Genomics Institute
- The McLaughlin Centre at the University of Toronto
- The Hospital for Sick Children Research Institute and Foundation
- Philanthropic donors
- Private sector partners

TCAG leverages these funds to attract grants from Genome Canada, the Canadian Institute for Advanced Research (CIFAR), CIHR, the Wellcome Trust, Autism Speaks, and others.

TCAG AT A GLANCE

- founded in **1998**
- **80 employees**; located in the **MaRS Discovery District**
- the **only Canadian facility** running **all 4** major **next-generation sequencing** technologies
- includes facilities for genome sequencing, bioinformatics, microarrays, genotyping, cytogenomics, biobanking, and statistical analysis
- hosts internationally-used databases like the ***Database of Genomic Variants***
- developed the **Ontario Population Genomics Platform** repository of **control DNA samples**
- over **1,500 laboratories** have used TCAG, from **10 Canadian Provinces** and **33 countries**
- **68% from Ontario**, 86% from Canada
- **57 companies**, including **33 from Ontario**
- **36 government or NGO** institutions
- **290 academic institutions** (universities, teaching hospitals, colleges)
- over **580 publications** cite TCAG support
- >350 HQP have been **trained**
- 37 **Genome Canada projects** supported
- **Science &Technology Innovation Centre**, since Genome Canada's inception in 2001
- **$111 million** of investment leveraged, including **over $63 million in cost recoveries**



IN THE NEWS (full list at www.tcag.ca/news/index.html)

Personal Genome Project Canada launches

December 13, 2012

The Personal Genome Project Canada (PGP-C) launched this week, giving Canadians an unprecedented opportunity to participate in a groundbreaking research study about human genetics and health. Collaborating with Harvard Medical School's Personal Genome Project, PGP-C aims to sequence the genomes of 100 Canadians over the next year. Combined, the projects will sequence 100,000 individuals over 10 years, and the genetic information collected will be deposited into a public repository. The sequenced genomes will serve as a valuable resource to researchers searching for the genetic basis for diseases, including cancer and autism, as well as scientists working on computer software to better analyze human genome sequence information.

Autism-associated variants uncovered by TCAG and Population Diagnostics could yield diagnostic tests

December 12, 2012

Researchers at The Centre for Applied Genomics, in collaboration with partners at Population Diagnostics (Melville, NY) have discovered variants in many genes that are involved in the development of autism. These variants are being developed as diagnostic tests for early detection of autism.

Toronto's Hospital for Sick Children Selects Ion Proton in Whole Genome Sequencing Push

June 20, 2012

The Hospital for Sick Children (SickKids) will feature the Ion Proton sequencer from Life Technologies when it launches a whole-genome sequencing program at the hospital's new Centre for Genetic Medicine. The centre will include four Ion Proton instruments, installed at TCAG, the first Canadian laboratory to acquire this groundbreaking new technology. Initially, a research project will investigate the impact of sequencing the entire genomes of patients admitted to SickKids, with the ultimate goal to enable routine genome sequencing as standard of care.

SCIENTIFIC, MEDICAL AND COMMERCIAL IMPACT

- ★★ **Shwachman-Diamond syndrome gene** (*Nature Genetics* 2003)
- ★ **Autism candidate genes and >500 rearrangement breakpoints** (*Science* 2003)
- ★★ **Progressive myoclonus epilepsy gene** (*Nature Genetics* 2003)
- ★★ **Rett syndrome *MeCP2* gene isoform** (*Nature Genetics* 2004)
- **Global copy number variation; Database of Genomic Variants** (*Nature Genetics* 2004)
- ★★ **Non-photosensitive trichothiodystrophy** (*AJHG* 2005)
- ★ **Canine epilepsy** (*Science* 2005)
- ★★ **Williams-Beuren syndrome duplication** (*NEJM* 2005)
- **Genome-wide copy number maps** (*Nature* 2006, *Nature Genetics* 2006)
- ★ **Genome-wide association and novel locus for colorectal cancer** (*Nature Genetics* 2007)
- ★★ **CNVs and genetic risk in autism** (*Nature Genetics* 2007, *AJHG* 2008)
- ★ **CNVs in Li-Fraumeni Syndrome** (*PNAS* 2008)
- ★ **CNVs in medulloblastoma** (*Nature Genetics* 2009)
- ★★ ***PTCHD1* gene in autism and intellectual disability** (*Science Translational Medicine* 2010)
- ★★ **Chromosome 16 duplications in autism** (*Journal of Medical Genetics* 2010)
- ★★ **Copy number variation in autism** (*Nature* 2010)
- ★★ **ADHD risk genes** (*Science Translational Medicine* 2011)
- ★★ ***SHANK1* deletions in autism** (*American Journal of Human Genetics* 2012)
- ★★ **Genetic variants in heart disease** (*PLoS Genetics* 2012)

★ = **Innovation resulting in intellectual property**

★ = **SickKids Hospital diagnostic test**