

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. 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:

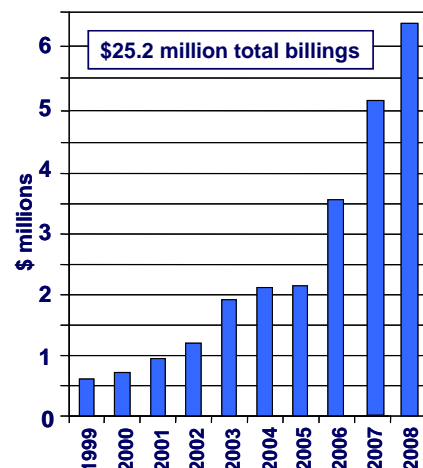
- The Canada Foundation for Innovation (CFI)
- The Government of Ontario's Ministry of Research and Innovation (MRI)
- Genome Canada, through the Ontario Genomics Institute
- The Hospital for Sick Children Research Institute and Foundation

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**
- **>70 employees**; located in the **MaRS Discovery District**
- the **only Canadian facility** running all **3 major next-generation sequencing** technologies
- includes facilities for next-generation sequencing, microarrays, genotyping, sequencing, cytogenomics, synthesis, biobanking, statistical analysis, bioinformatics, and genome resources
- hosts internationally-used databases like the **Database of Genomic Variants**
- developed the **Ontario Population Genomics Platform** repository of **control DNA samples**
- **1,183 laboratories** have used TCAG, from **9 Canadian Provinces** and **28 countries**
- **70% from Ontario**, 86% from Canada
- **44 companies**, including **33 from Ontario**
- **13 government or NGO** institutions
- **211 academic institutions** (universities, teaching hospitals, colleges)
- in 2008, **145 publications** cited TCAG support
- **>350 HQP** have been **trained**
- **23 Genome Canada projects** supported
- **Genome Canada Science and Technology Platform**, since Genome Canada's inception in 2001
- **\$76.7 million** of investment leveraged, including over **\$25 million in cost recoveries**



IN THE NEWS (full list at www.tcag.ca)

September 4, 2007

First individual human diploid human genome published by international research group

Researchers at the J. Craig Venter Institute (JCVI), along with collaborators at The Hospital for Sick Children (SickKids) in Toronto and the University of California, San Diego (UCSD), have published a genome sequence of an individual, J. Craig Venter, PhD, that covers both of his chromosome pairs (or diploid genome), one set being inherited from each of his parents. These findings are published in the current issue of the journal *PLoS Biology*.

February 18, 2007

Canadian scientists lead international autism genome discoveries

Autism-causing genes linked to a special group of neurons

Researchers at The Hospital for Sick Children (SickKids) and the Offord Centre for Child Studies have led an international consortium in the discovery of a previously unidentified chromosomal region containing autism-causing genes. Their findings, part of the largest genome scan ever attempted in autism research, have just been published online in the prestigious journal *Nature Genetics*.

March 13, 2008

International partnership to produce “gold standard” gene copy reference of the human genome

Wellcome Trust grant expands the Toronto Database

A grant was awarded to The Centre for Applied Genomics (TCAG) at The Hospital for Sick Children (SickKids) which, jointly with the European Molecular Biology Laboratory's European Bioinformatics Institute (EMBL-EBI), will collect, organize and curate genome-wide information, enhancing the translation of genetic information into new diagnostic, prognostic and therapeutic tools for the improved health of children. The funding will expand operations of TCAG's *Database of Genomic Variants* (DGV)—known as “the Toronto Database”—the world's premier database housing structural and copy number variation data in the human genome.

SCIENTIFIC, MEDICAL AND COMMERCIAL IMPACT

TCAG's Scientists and Associates have published **382 papers** in the **last 5 years**, including:

- ★ ★ ■ 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)
- Cystic Fibrosis modifiers (*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 (e.g. (del)16p11.2) (*Nature Genetics* 2007, *AJHG* 2008)
- CNV guidelines, nomenclature, and standards (*Nature Genetics* 2007)
- Diploid sequence of a human individual (*PLoS Biology* 2007)
- CNVs in Li-Fraumeni Syndrome (*PNAS* 2008)
- CNVs in medulloblastoma (*Nature Genetics* 2009)

★ = Innovation resulting in intellectual property

★ = SickKids Hospital diagnostic test