



Backgrounder

About Glioblastoma Multiforme (GBM)

Every day in Canada 27 people are diagnosed with a brain tumour. Glioblastoma multiforme (glioblastoma) is one of the most common and deadliest forms of brain cancer and usually strikes adults aged 50-70. The prognosis for most is dismal. Life expectancy from diagnosis is one to two years.

A 2009 estimate reports that about 2,600 Canadian adults will be diagnosed with primary brain tumours, and 1,750 will die from their disease each year. Primary Glioblastoma (GBM), a World Health Organization grade IV tumour, accounts for approximately 40 per cent of all central nervous system malignancies. In patients over the age of 60, the rate of GBM greatly increases, accounting for the majority of primary brain tumours in this population.

Treatment is relatively unchanged in 30 years. The standard of care is surgery (craniotomy), radiation and chemotherapy. An aggressive cancer, it spreads to nearby brain tissue quickly and often recurs after treatment.

The cause is unknown and it can develop spontaneously. It is comprised of many distinct genetic subtypes. It develops in glial cells usually in the brain but it can also develop in the spinal cord and brain stem. These cells help nerves in the brain to function.

Information sources: Web sites for: Canadian Cancer Society, USC, Brain Tumor Foundation of Canada, Alberta Health Services

The Pan-Canadian Team

The goal of the Terry Fox Research Institute's Pan-Canadian Targeting Therapeutics for GBM Project is to discover new drug therapies to improve tumour control and quality of life for patients. The team hopes to have a few new drugs heading into clinical trials within five years.

Alberta

The Alberta team will build on its strengths and expertise in growing stem cells from brain tumours (brain tumour initiating cells) in the laboratory to create models that mirror the molecular and clinical genetic alterations appearing in GBM tumours. The Alberta team will provide these models to partner teams in British Columbia and Ontario for genomic subtyping and identification of potential new drug therapies.

British Columbia

This team will perform genome sequencing and gene expression analyses on selected BTIC lines provided by the Alberta team for the purpose of identifying molecular alterations of biological significance which may be important to determining future therapeutics. The team will also study tissue samples collected with the goal of discovering “molecular signatures” which can be used to tailor treatment.

Ontario

Researchers with the Ontario team, including researchers involved in the TFRI-OICR Selective Therapies Program, will be involved in functional genomic analyses, pre-clinical drug development, and testing, and design and initiation of clinical trials at leading cancer centres in Toronto and area. They will focus on screening to find new drugs for this form of cancer. Their work will involve the use of robotics and chemical high throughput screening facilities.

Funding Breakdown by Funder

Funder	Total Contribution
Terry Fox Research Institute	\$3.1 M
Alberta Innovates - Health Solutions	\$2 M
Alberta Cancer Foundation	\$1.91M
Genome Canada	\$612,000
Genome BC	\$306,000
BC Cancer Foundation	\$250,136
Total	\$8.17M

Participating Investigators (by Province)

Alberta	British Columbia	Ontario	Ontario
All affiliated with The University of Calgary	All affiliated with The University of British Columbia, BC Cancer Agency (Genome Sciences Centre)	All affiliated with The University of Toronto	Dr. Sheila Singh (McMaster University)
Dr. Samuel Weiss (Hotchkiss Brain Institute)	Dr. Marco Marra	Dr. David Kaplan (The Hospital for Sick Children)	
Dr. Stephen Robbins (Southern Alberta Cancer Research Institute)	Dr. Steven Jones	Dr. Warren Mason (University Health Network)	
Dr. Jennifer Chan (SACRI/HBI)	Dr. Stephen Yip	Dr. Rima Al-Awar (Ontario Institute for Cancer Research)	
Dr. Artee Luchman (HBI)	Dr. Sandra Dunn (BC Children’s Hospital)	Dr. Jason Moffat	
Dr. Jay Easaw (SACRI)	Dr. Brian Toyota (Vancouver General Hospital)	Dr. Michael Moran	
Dr. Donna Senger (SACRI)		Dr. Jeffrey Wrana (Samuel Lunenfeld Research Institute, Mount Sinai Hospital)	
Dr. Gregory Cairncross (SACRI/HBI)			

Research centres and agencies affiliated with the project:

Alberta: Hotchkiss Brain Institute, Southern Alberta Cancer Research Institute, Tom Baker Cancer Centre, Clark H. Smith Brain Tumour Research Centre, the University of Calgary, Genome Alberta.

British Columbia: BC Cancer Agency’s Genome Sciences Centre, Vancouver General Hospital, BC Children’s Hospital, the University of British Columbia.

Ontario: Princess Margaret Hospital, The Hospital for Sick Children, Mount Sinai Hospital, University Health Network, Ontario Institute for Cancer Research, NCIC Clinical Trials Group, the University of Toronto, McMaster University.