BioCanRx
Biotherapeutics for Cancer Treatment
Biothérapies pour le traitement du cancer

Catalyst Program

Bispecific T-cell engager antibodies targeting CD133+ brain tumor-initiating cells: A novel immunotherapy for recurrent glioblastoma

Oct. 14, 2016 to Sept. 30, 2017

Highlights

- Development of a new promising therapeutic option for for future GBM patients using bispecific T-cell engager antibodies (BiTEs) to target cells that drive recurrent GBM
- Harnesses the immune system and directs T-cells to specifically target CD133+ GBM cells
- Evaluates the development of custom-built BiTe designs for each TAA and epitope

targeted cancers

Brain Cancer:
Recurrent Glioblastoma

The goal of this project is to achieve definitive and statistically powered preclinical validation of the toxicity, specificity and efficacy of CD133/CD3 BiTEs in their in vivo therapy-adapted model of GBM recurrence to set the stage for the design of a clinical trial.

Project value

$200,000
BioCanRx contribution:
$100,000

Biotherapeutics

Antibodies:
BiTe-mediated cytotoxicity

Partners

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About the project

Glioblastoma (GBM) is the most common primary adult brain tumor and is typically highly aggressive, infiltrative and resistant to standard therapies. Even with surgery, standard chemotherapy with temozolomide (TMZ), and radiation, tumor re-growth (or recurrence) and patient relapse are inevitable. Patients typically face a <15 months survival rate, with fatal outcomes upon disease progression post-therapy. Clearly a new form of therapy is needed to help improve the outlook of this disease.

Recently a therapeutic model has emerged for GBM consisting of harnessing the patient's immune system to attack the tumour. This paradigm can specifically kill those cancer cells by targeting the tumour's proteins and drawing in the T cells of the immune system.

Dr. Singh and Dr. Moffat will combine their expertise in human GBM biology and clinically relevant patient-derived stem cell models of brain tumors, and human synthetic antibody engineering technologies, to develop effective immunotherapies to target recurrent GBM.

Their overall goal is to develop a therapeutic strategy targeting CD133 in recurrent glioblastoma, using newly designed and empirical immunotherapies that harness the immune system and direct T cells to specifically kill CD133+ GBM cells. They will also undertake preclinical evaluation of these novel therapeutic agents, called "BiTEs" or bispecific T-cell engager antibodies, using their unique animal model of human GBM recurrence.

After preclinical testing this project hopes to validate and translate its immunotherapeutic agent into early clinical development, generating targeted therapies and therapeutic benefits for future GBM patients.

CCAB

The Terry Fox Research Institute
L'Institut de recherche Terry Fox

Key investigators

Co-leads:

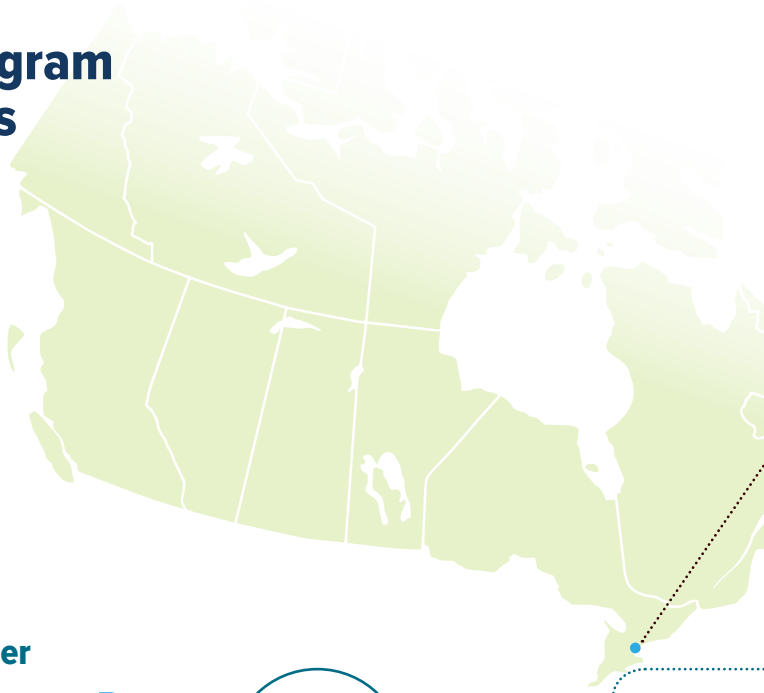
Dr. Sheila **Singh**

Dr. Jason **Moffat**

McMaster University

University of Toronto

Catalyst Program Investigators



Hamilton/Toronto
McMaster University,
Donelly Centre,
University of Toronto
Dr. Sheila Singh
Dr. Jason Moffat

Partner

Terry Fox Research Institute $100,000

Centre for the Commercialization of Antibodies and Biologics (CCAB) in-kind

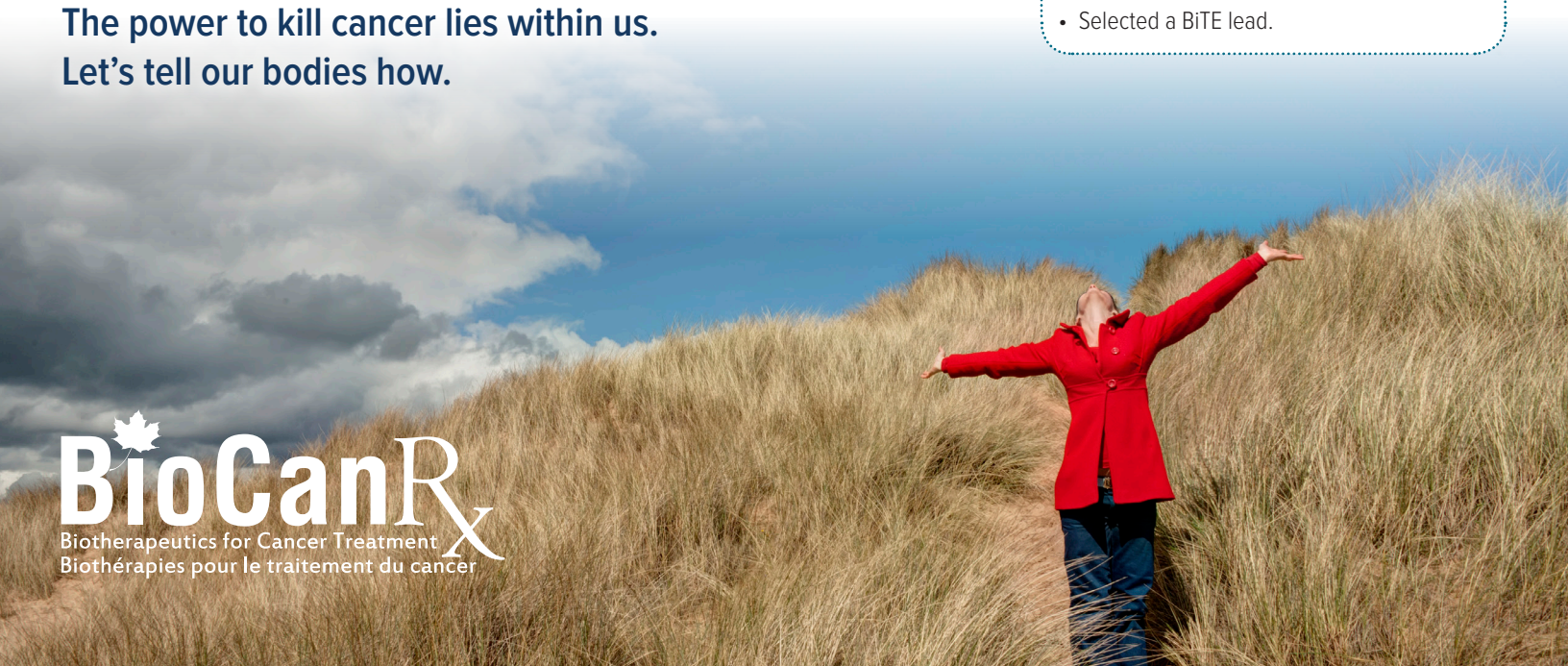
Key Milestones

Oct. 1st 2016 to Oct. 1 2017
- Validate, refine and deliver treatment protocols for CD133 BiTEs.
- Assess the blood brain barrier penetration of biologics with pharmacokinetic/pharmacodynamics studies, and investigate strategies to improve delivery of biologics.

Jan. 1 – June 30
- Rounds of in vivo mouse-adapted therapy.

Future stages of funding deliverables
- Data analysis and assessment of toxicity and efficacy of preclinical models.
- Definitive and statistically powered preclinical validation of the safety, specificity and efficacy of CD133 BiTEs in their in vivo therapy-adapted model of human GBM recurrence.
- Undertake pharmacokinetic and pharmacodynamic studies to assess delivery of BiTEs across the blood brain barrier, BiTE bioavailability and BiTE dose scheduling optimization.
- Selected a BiTE lead.

The power to kill cancer lies within us.
Let's tell our bodies how.



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