

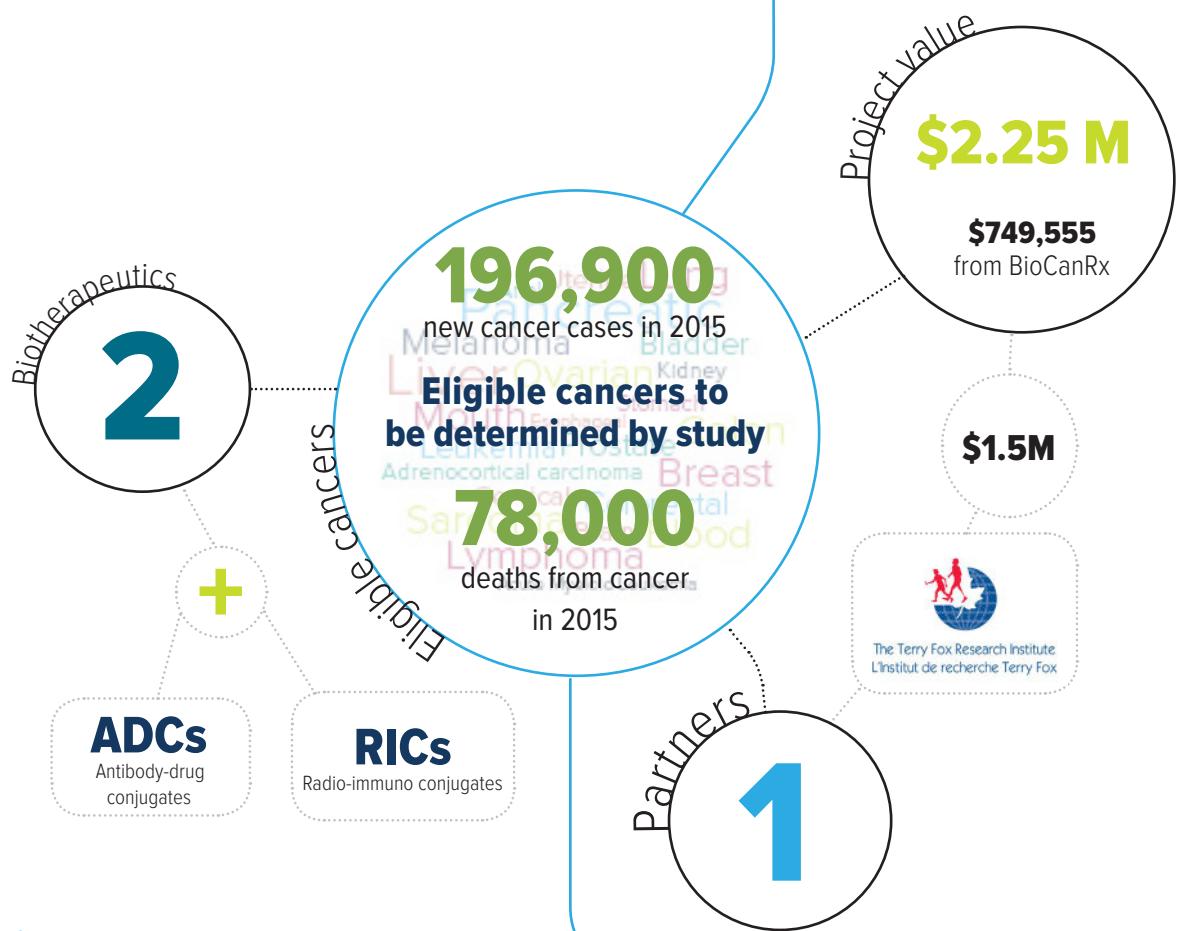
Enabling Studies Program

Development of antibody-based platforms that specifically target cancer cells

September 1, 2015 to September 30, 2020

Highlights

- Develops two new platforms for precisely delivering anti-cancer drugs and radiation therapy using antibodies as a delivery mechanism.
- Employs BioCanRx expertise in the development of novel therapeutic antibodies and antibody-drug conjugates.
- Advances Canadian innovation that combines biotherapeutics with radiotherapy and imaging.



About the project

Antibodies have the ability to bind to specific proteins found on cancer cells and thus, can target cancer with incredible accuracy. Many tumour-targeted antibodies can be used to disrupt tumour function by interfering with a cell surface receptor, or may flag the cancer cell for destruction by the immune system. Tumour-binding antibodies that don't have an anti-cancer effect on their own can be engineered to precisely deliver a payload that is toxic to cancer cells. Antibodies armed with drugs, called antibody-drug conjugates (ADCs), can deliver cancer-killing compounds directly to the cancer cell, requiring less drug and potentially resulting in a more potent effect. Alternatively, this toxic payload might be a radioisotope, which can precisely deliver radiation therapy in much the same way. By directly targeting cancer cells, both radio-immuno conjugates (RICs) and ADCs can result in less negative side effects and better outcomes, as compared to traditional chemo and radiation therapy. Another benefit of the use of radio-immuno conjugates is that they can be used for improved imaging of a patient's cancer.

The project team, led by Dr. Steven Jones, will analyze cancer genome data from the Michael Smith Genome Sciences Centre to identify and validate six new antibody targets that are specific to cancer. Under the guidance of Dr. Jones, the team will then create ADCs that combine the identified antibodies with pancratistatin, a plant-derived compound shown to selectively kill cancer cells. Lastly, the team will explore the suitability of the antibodies for combination with radioisotopes for imaging and therapeutic purposes.

Enabling Study investigators

Vancouver
BC Cancer Agency,
University of British Columbia,
Simon Fraser University

Scientific investigators
Dr. Steven Jones
Dr. Gregg Morin

BC Cancer Agency,
University of British Columbia

Scientific investigators
Dr. François Bénard
Dr. Kuo-Shyan Lin

Triumf
Scientific investigator
Dr. Paul Schaffer

St. Catharines
Brock University
Scientific investigator
Dr. Tomas Hudlicky

BioCanRx
\$749,555
approved on
June 10, 2015

Partner contributions

Terry Fox Research Institute
\$1.5M

To fund the identification and validation of novel antibodies and the development to combine these antibodies with radioisotopes.

Targets

Therapeutic antibody generation (Core)

Lead : John Babcock

Deep sequencing for mAb-specific
target discovery and validation

PROJECT 1
Lead: Steven Jones

- RNAseq and bioinformatics
- Splice variants, gene fusions
- Multiple tumour types
- Protein target validation
- mAb characterization

mAbs
Monoclonal
antibodies

mAbs
Monoclonal
antibodies

Antibody-drug conjugate
platform development

PROJECT 2
Lead: Steven Jones

- Potent cytotoxic conjugates
- Novel cleavable linkers
- Non-conventional toxins

Radio-immuno conjugate
platform development

PROJECT 3
Lead: François Bénard

- Diagnostics
- Theranostics
- Radio-immunotherapy

Project outcome

Suite of multi-modal therapeutics with matched theranostics

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