BioCanRx
Biotherapeutics for Cancer Treatment
Biothérapies pour le traitement du cancer

Enabling Studies Program

Combining oncolytic vaccine therapy with adoptive cell therapy to target cancers expressing MAGE-A3

July 1, 2015 to June 30, 2016

Highlights

- Enables application for a world-first clinical trial combining adoptive cell therapy with the internationally recognized Canadian innovation of oncolytic vaccines.
- Prepares an exciting combination of technologies that have a clear mechanism for working together to kill cancer cells.

BioCanRx core facilities: 3

Biotherapeutics: 3

Eligible cancers: 150,400 new cases of these cancers in 2015

Lung, Uterine, Pancreatic, Melanoma, Stomach, Anal, Bladder, Prostate, Kidney, Ovarian, Cervical, Colon, Mouth, Liver, Esophageal, Breast

Project value: $326,885
$186,885 from BioCanRx
$80,000 — OICR Ontario Institute for Cancer Research
$60,000 — TURNSTONE BIOLOGICS • THINK POSSIBLE

AdMA3
Adenovirus vaccine/ MAGE-A3

+

MG1MA3
MG1 Maraba/MAGE-A3 oncolytic virus

T cells
Autologous T cells reactive to MAGE-A3

Partners: 2

About the project

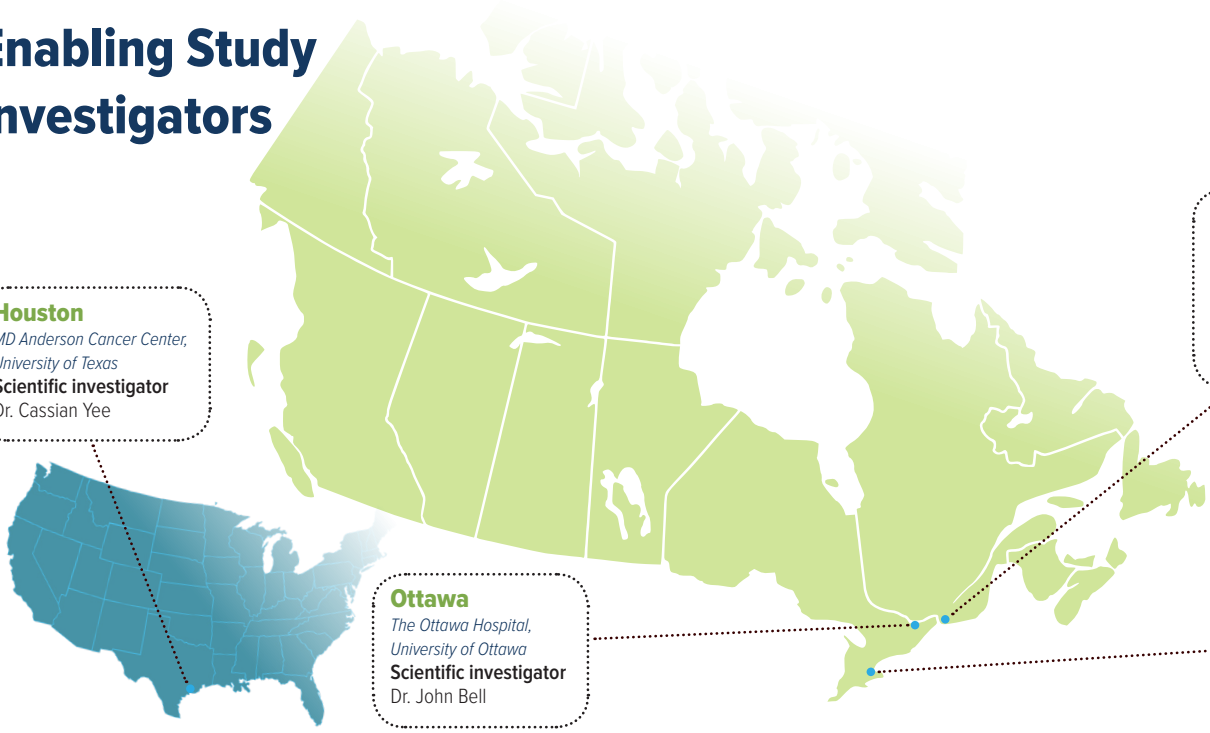
The goal of this project is to enable a potential combination therapy that capitalizes on two things: the recent U.S. successes of adoptive cell therapy (ACT) in early clinical trials; and the Canadian innovation of oncolytic vaccines. Oncolytic vaccine therapy makes the cancer visible to the immune system while also directly infecting and killing cancer cells.

The proposed oncolytic vaccine uses a genetically altered adenovirus (common cold) that primes the immune system to recognize a specific antigen found in many solid tumours — MAGE-A3. This is followed by the genetically altered oncolytic Maraba virus, which is engineered to also express MAGE-A3. In combination, these viruses enable a certain type of white blood cell, called T cells, to proliferate and see the cancer cells as foreign. The effect is an attack on the cancer by the T cells and by the Maraba virus. However, only a small group of the T cells produced in response to the oncolytic vaccine are the type that can attack cancer cells expressing MAGE-A3.

The project team proposes to supplement the oncolytic vaccine approach with T cells that have been programmed to search out the cancer cells expressing MAGE-A3. This would be an adaptation of a technology developed by Dr. Cassian Yee at MD Anderson Cancer Center in Texas using equipment not available in Canada. The funding will support the extraction of T cells from 6 patients in Canada that will then be sent to Texas for Dr. Yee to produce T cells programmed to see MAGE-A3. The activity of these cells will be measured before they are frozen and sent to back Canada, where potency tests will be performed. Should this be successful, the team in Montreal will adapt Dr. Yee's method to the facilities available in Canada and compare the results.

Key investigator
Dr. Yonghong Wan
McMaster University

Enabling Study investigators



Houston
MD Anderson Cancer Center, University of Texas
Scientific investigator
Dr. Cassian Yee

Montreal
Hôpital Maisonneuve-Rosemont, University of Montreal
Scientific investigator
Dr. Jean-Sebastien Deslisle
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Hamilton
McMaster University , Juravinski Cancer Centre, Hamilton Health Sciences
Scientific investigators
Dr. Jonathan Bramson
Dr. Brian Lichty
Dr. Yonghong Wan
Clinical advisor
Dr. Rosalyn Juergens

BioCanRx
$186,885
approved on
June 10, 2015

BioCanRx core facilities

GMP viral vector laboratory
McMaster University

GMP viral vector laboratory
The Ottawa Hospital

GMP cell therapy lab
Hôpital Maisonneuve-Rosemont

July 1, 2015
- Project starts

July 1 to Dec. 31, 2015
- Collect T cells from three patients
- Arrange and hold pre-CTA (Clinical Trial Application) meeting with Health Canada

Jan. 1 to March 31, 2016
- Collect T cells from three more patients
- Complete testing of three samples in mice with immune systems that mimic the human immune system

April 1 to June 30, 2016
- Complete testing of additional three samples in mice with immune systems that mimic the human immune system
- Analyze and prepare data to support writing and submission of CTA for Health Canada submission

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

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