

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

July 1, 2015 to June 30, 2017

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

150,400

new cases of these cancers in 2015

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

Project value
\$695,181
 \$263,181 from BioCanRx

\$160K
 \$200K
 OICR Ontario Institute for Cancer Research
 TURNSTONE BIOLOGICS • THINK POSSIBLE

Canadian Cancer Society \$50K
 \$2K
 JOHNS HOPKINS UNIVERSITY

THE TERRY FOX RESEARCH INSTITUTE
 L'INSTITUT DE RECHERCHE TERRY FOX
 \$20K

Partners
5

Key investigator
 Dr. Yonghong Wan
 McMaster University

AdMA3
 Adenovirus vaccine/
 MAGE-A3

MG1MA3
 MG1 Maraba/MAGE-A3
 oncolytic virus

T cells
 Autologous T cells
 reactive to MAGE-A3

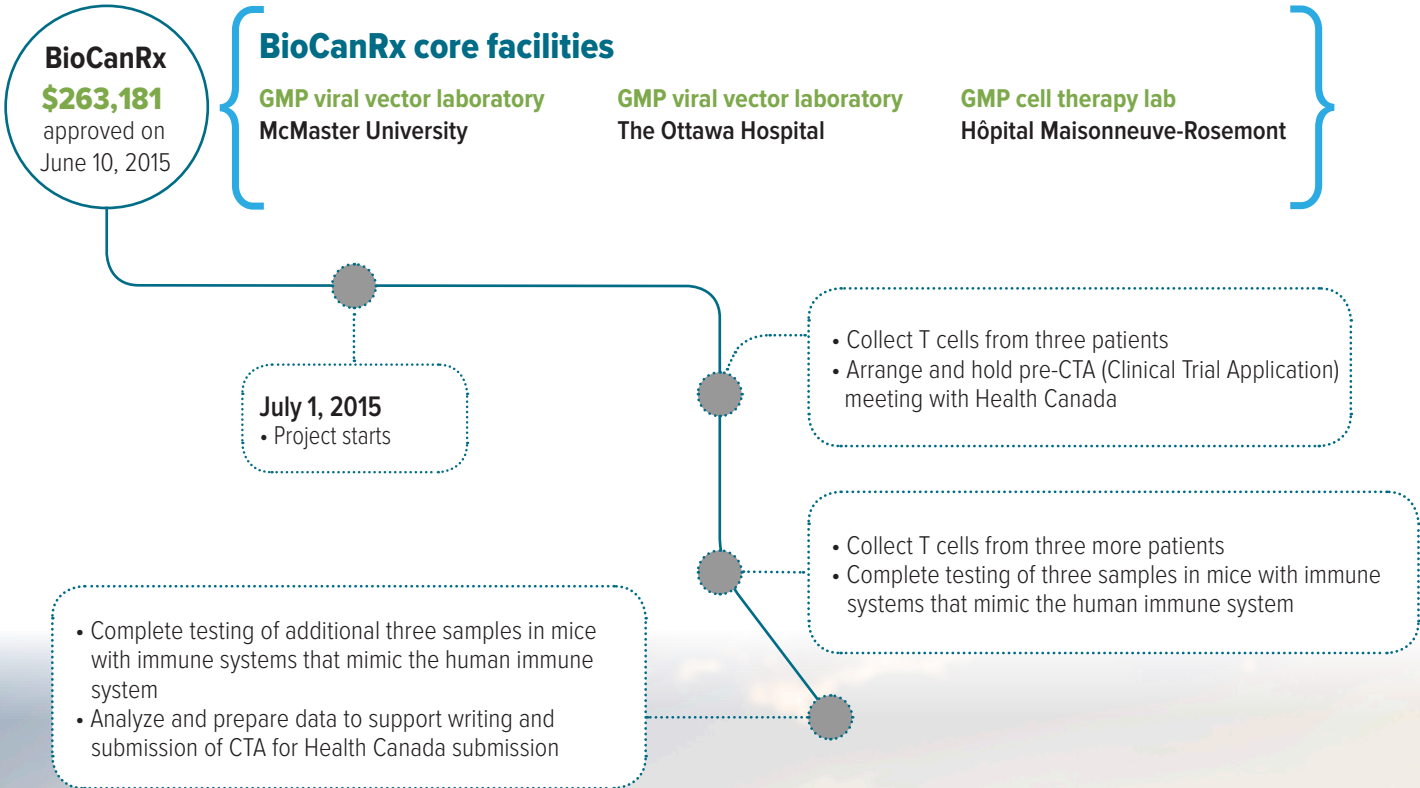
About the project

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.

Enabling Study investigators



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

