BioCanRx
Canada's Immunotherapy Network
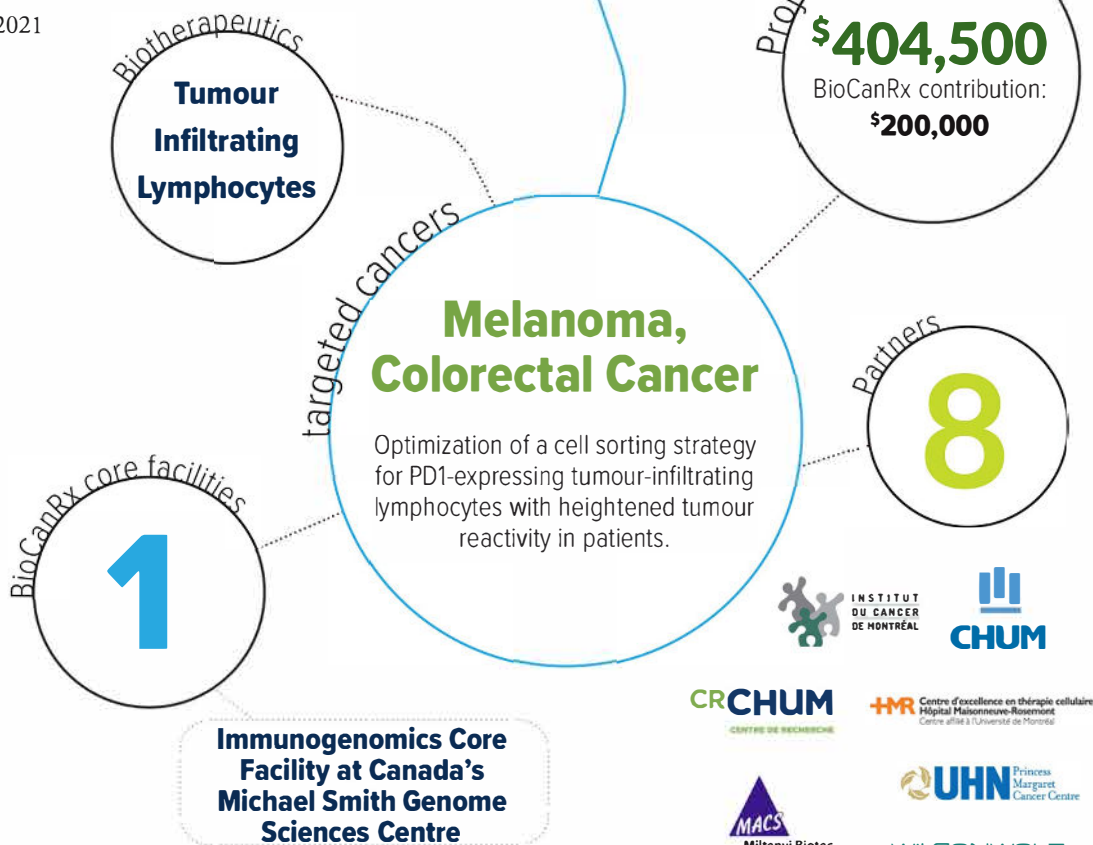## Le réseau canadien d'immunothérapie

Catalyst Program

Improving adoptive cell transfer immunotherapy with clinical-grade cell sorting of tumor-reactive T cells infiltrating solid tumors
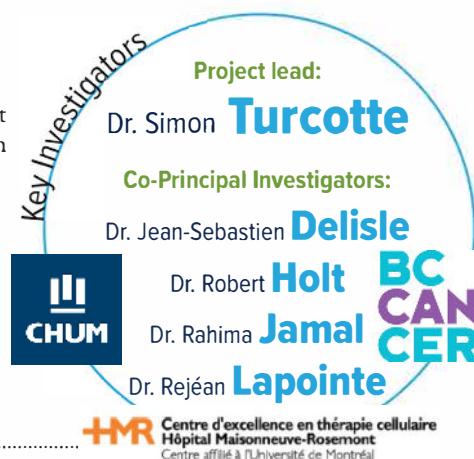
April 23rd, 2018 to March 31st, 2021

Highlights

- This project will generate scientific evidence showing the superior features of the tumour-reactive T cell product in comparison to one obtained with conventional tumour-infiltrating T-cell manufacturing
- The results of the proposed study will be utilized by other BioCanRx network investigators planning to use cell sorting to improve the efficacy of other types of adoptive cell transfer immunotherapy

Biotherapeutics

Tumour Infiltrating Lymphocytes

targeted cancers

Melanoma, Colorectal Cancer

Optimization of a cell sorting strategy for PD1-expressing tumour-infiltrating lymphocytes with heightened tumour reactivity in patients.

Project value

$404,500

BioCanRx contribution:
$200,000

Partners

8

BioCanRx core facilities

1

Immunogenomics Core Facility at Canada's Michael Smith Genome Sciences Centre

INSTITUT DU CANCER DE MONTRÉAL

CHUM

CRCHUM CENTRE DE RECHERCHE

HMR Centre d'excellence en thérapie cellulaire Hôpital Maisonneuve-Rosemont Centre affilié à l'Université de Montréal

MACS Miltenyi Biotec

UHN Princess Margaret Cancer Centre

WILSONWOLF

Adaptive biotechnologies

About the project

Cancer immunotherapy, which uses the immune system to destroy cancer cells, is a real medical breakthrough. However, current strategies mainly rely on causing a general immune boost, which benefits only a minority of patients with tumours well recognized by the immune system. A small number of anti- tumour immune cells, called T cells, can naturally infiltrate tumours in most patients. One powerful approach to cancer immunotherapy is to make a cell transfusion product out of tumour-infiltrating T cells produced in large numbers outside the body. We propose to enhance this approach, called adoptive cell transfer immunotherapy, by making a cell transfusion product highly enriched in tumour-reactive T cells. This will be achieved by selecting tumour-infiltrating T cells expressing a marker called PD- 1, that acts as a "tag" for tumour-reactive T cells. To do that, we have access to a sophisticated new device called

a cell sorter, currently unique in Canada. The main goal of this project is to get the approval from Health Canada to use the tumour-reactive T cell product in a clinical trial within two years. We will also generate scientific evidence showing the superior features of this cell product in comparison to one obtained with conventional tumour-infiltrating T- cell manufacturing. The knowledge generated throughout the project will serve other BioCanRx network investigators planning to use cell sorting to improve the efficacy of other types of adoptive cell transfer immunotherapy.

Key Investigators

Project lead:
Dr. Simon **Turcotte**

Co-Principal Investigators:
Dr. Jean-Sebastien **Delisle**
Dr. Robert **Holt**
Dr. Rahima **Jamal**
Dr. Rejéan **Lapointe**

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Catalyst Program Investigators

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Adaptive Biotechnologies
Matt Schofield

Barcelona, Spain
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Dr. Alena Gros

Partners

Institut du Cancer de Montréal (ICM)
$129,000 (In-Kind)

Centre hospitalier de l'Université de Montréal (CHUM) Research Center
$18,732 (In-Kind)

Centre de recherche du l'Université de Montréal (CRCHUM) Cancer Axis Immune Monitoring Platformà
$600 (In-Kind)

CHUM Leukapheresis Unit
$3,500 (In-Kind)

Centre d'excellence en thérapie cellulaire (CETC)
$29,974 (In-Kind)

Miltenyi Biotec à
$13,694 (In-Kind)

Wilson Wolf Corporation
$4,000 (In-Kind)

Adaptive Biotechnologies
$5,000 (In-Kind)

Key Milestones

Aim 1
- To validate that PD-1+ sorted TILs are enriched in functional neoAg reactive T cells.

Aim 2
- To establish manufacturing process of PD-1+-sorted TIL products and submit a clinical trial application (CTA).

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

BioCanRx
Biotherapeutics for Cancer Treatment
Biothérapies pour le traitement du cancer