

Manufacturing Process Development for Metabolically Reprogrammed Tumor-Infiltrating Lymphocytes

Duration: 11/1/2024 to 1/31/2027

Targeted Cancer:

Metastatic Melanoma

Researchers are developing metabolically reprogrammed tumor-infiltrating lymphocytes (TILs) with the drug halofuginone. This approach aims to overcome T cell dysfunction induced in the tumor microenvironment, improving the effectiveness of TIL therapy for melanoma.

Key Investigators:

Dr. Marcus Butler



Dr. Samuel Saibil

1

BioCanRx Funded
Core Facility

Philip S. Orsino Cell Processing Facility, University Health Network*

*Previously BioCanRx funded

Biotherapeutic:

Adoptive Cell Therapy

Project value:

\$742,250

BioCanRx Contribution:
\$367,250

1

Partner

The Princess Margaret Cancer Foundation 

About the project:

Harnessing the power of the immune system to fight cancer has revolutionized the treatment of melanoma. One promising form of immune therapy is to harvest T cells from a patient's tumor, referred to as tumor infiltrating lymphocytes (TILs), and then massively expand their numbers outside the body before re-infusing them to fight the cancer. This adoptive cell therapy (ACT) approach using TILs has resulted in durable disease control for melanoma patients. One major factor that limits the clinical effectiveness of ACT using TILs is a dysfunctional state of the TILs that is

induced by the tumor itself. A central feature of this tumor-induced T cell dysfunction is an impairment in the ability of the T cells to generate energy. This team has shown that a drug, halofuginone, can be used to treat the TILs when they are being expanded outside the patient to reprogram their metabolism and reverse this metabolic dysfunction. The next step towards the future clinical trial is to establish laboratory procedures to generate metabolically reprogrammed TILs that are suitable for infusion in patients. The key deliverable for this proposal is to generate the

information and data required for submission to Health Canada.

This work will build upon the existing cell therapy manufacturing expertise established at their institute that was previously funded by BioCanRx to perform the first ACT trials using TILs in Canada. The manufacturing process established in this project will be applicable to the manufacturing of TILs across numerous tumor types, thereby potentially expanding its impact as the use of TILs expands to other solid tumors.



-  Research
-  Virus Manufacturing
-  Cell Manufacturing
-  Clinical Trial Site
-  Industry Collaborator
-  Core Facility (research services)
-  Non-profit/Governmental/
Patient/End-User Group

Research:

University Health Network, Toronto, ON,
 Dr. Marcus Butler, Dr. Samuel Saibil,
 Dr. Alexandra Easson, Dr. David Goldstein,
 Dr. Michael Reedijk, Dr. Zaid Saeed Kamil

Cellular Manufacturing:

Philip S. Orsino Cell Processing
 Facility, Toronto, ON,
 Dr. Linh Nguyen, Dr. Dennis Kim,
 Dr. Igor Novitsky Basso

Partner:

Princess Margaret
 Cancer Foundation

**Total Pledged Partner
 Contributions: \$375,000**

**Total Pledged Matched
 Contributions: \$375,000**

Key Deliverables

1. Develop streamlined manufacturing procedure for Halo-TILs.
2. Establish a Quality Control strategy.
3. Establish a study protocol for healthy donor feeder cells
4. Hold a pre-CTA Meeting with Health Canada
5. Validation batch runs

Final Deliverable

Preparation of Quality modules for clinical trial application to Health Canada to evaluate the use of metabolically reprogrammed TILs to treat patients with melanoma.

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