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

Catalyst Program

EV-Stim to Prevent Postoperative Immunosuppression and Metastases

Project duration: 2025-3-15 to 2026-9-15

Targeted cancer type:

Solid tumors

This project aims to restore cancer-killing immune cell function by using extracellular vesicles (EVs) to reprogram "surgery-induced myeloid-derived suppressor cells.

Key Investigators:

Project Lead:

Dr. Rebecca Auer

Dr. Brian Lichty

Dr. Jennifer Quizi

The Ottawa Hospital Research Institute | L'Hôpital d'Ottawa Institut de recherche

McMaster University

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BioCanRx Funded Core Facility

The Ottawa Hospital's Biotherapeutics Manufacturing Centre

Biotherapeutic:
Other

Project value:

$945,000

BioCanRx Contribution:
$445,000

1
Partner

ESPHERA SynBio

About the project:

Surgical removal of tumors is the primary treatment for solid cancers, but surgery can weaken the immune system and heighten the risk of cancer recurrence or spread. This is due to cancer-killing immune cells losing their ability to function after surgery. A key contributor to their dysfunction is another population of cells, called MDSCs (myeloid-derived suppressor cells), that are known to suppress immune cells. MDSCs have been shown to increase in number and become more suppressive after surgery, and therefore the team has named them surgery-induced MDSCs (sxMDSCs).

Recent studies show that activating certain pathways in these MDSCs can weaken their ability to suppress. This finding suggests a potential for new therapies. With this project, the team will investigate the effects of activating these cellular pathways in sxMDSCs to restore the function of cancer-killing immune cells after surgery. This will be achieved by delivering targeted cell particles, called extracellular vesicles (EVs) that contain genes and proteins which will activate cellular pathways to reduce the effectiveness of these suppressive cells. With this project, the team will demonstrate if these EVs can restore the function of cancer-killing immune cells in humans and mice after surgery. Additionally, they will investigate whether these particles can reduce the recurrence and spread of cancer in mice after surgery. Lastly, the team will develop a manufacturing process for these EVs that can be scaled for future therapeutic applications.

Research:
McMaster University,
Hamilton, ON
Dr. Brian Lichty

Research:
Ottawa Hospital Research
Institute, Ottawa, ON
Dr. Rebecca Auer
Research:

Virus Manufacturing:
The Ottawa Hospital's
Biotherapeutics Manufacturing
Centre, Ottawa, ON
Dr. Jennifer Quizi

Partner:

Esphera SynBio

Total Pledged Partner Contributions: $500,000

Total Pledged Matched Contributions: $500,000

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

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