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

Catalyst Program

Optimization of Epitope-Flanking Regions in an Off-The-Shelf Ovarian Cancer RNA Vaccine

Project duration: 2025-4-1 to 2027-5-31

Targeted cancer type:

Ovarian cancer

This project aims to establish the most effective antigen-flanking regions for the development of their off-the-shelf RNA vaccine against ovarian cancer specific antigens.

Project value:

$2,164,352

BioCanRx Contribution:

$320,000

Biotherapeutic:

RNA-based vaccine

Key Investigators:

Project Lead:

Dr. Claude Perreault

Université de Montréal

Dr. Pierre Thibault

2 Partners

EPITOPEA

OVARIAN CANCER CANADA

About the project:

There are an estimated 30,000 new cases of ovarian cancer (OC) in North America each year. The research team and others consider that developing an off-the-shelf RNA vaccine based on OC-specific antigens represents a most promising strategy to elicit curative anti-OC immune responses. The team discovered 91 such antigens in primary human OC tumors using a disruptive proteogenomic approach. Their objective is now to design a vaccine that maximizes the immune response against OC-specific antigens. The question of immunogenicity is paramount in cancer immunotherapy, particularly given that patients' immune functions may be compromised by age and prior chemotherapy treatments. The team demonstrated in humans that the presentation of antigens to immune cells depends on the molecular environment of the antigens (e.g., the flanking regions). Furthermore, they showed in mice that changing the composition of antigen-flanking regions in an RNA vaccine dramatically impacts the strength of the anti-tumor immune response. Their project aims to identify and optimize the most effective flanking sequences for an anti-OC RNA vaccine. Epitopea, the industry partner for this project, is prepared to launch a Phase I clinical trial upon completion of this project.

Research:
Université de Montréal, Montreal, QC
Dr. Claude Perreault, Dr. Pierre Thibault

Partners:

Epitopea

Ovarian Cancer Canada

Total Pledged Partner Contribution: $1,844,352

Total Pledged Matched Contributions: $1,719,352

Total Leveraged Partner Contributions: $125,000

Key Deliverables

1. A precise estimation of the effect of flanking sequences on the presentation of 20 highly shared human epithelial ovarian cancer (EOC) aberrantly expressed tumor-specific antigens (aeTSAs)
2. A comprehensive evaluation of the impact of flanking sequences on the expansion, function, and repertoire of human CD8 T cells responding to 20 EOC aeTSAs
3. A comprehensive evaluation of the impact of flanking sequences on the in vivo distribution and functionality of anti-aeTSA T cells

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

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