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

Enabling Studies Program

Advancing GMP-Compliant Lentiviral Vector Manufacturing Enhancers for Cost-Effective Production of Anti-Cancer Cell Therapies

Duration: 11/1/2024 to 10/31/2027

Biomanufacturing Enhancement

Researchers are developing small molecules to enhance the production of Lentivirus (LV), a crucial component in the manufacture of CAR T cell cancer therapies. This manufacturing enhancement will help mitigate the high costs and inefficiencies in current LV manufacturing processes.

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BioCanRx Funded Core Facility

The Ottawa Hospital's Biotherapeutics Manufacturing Centre

Project value:
$1,521,129
BioCanRx Contribution:
$732,783

Biotherapeutic/ Technology:
Small molecules & biomanufacturing enhancement

Key Investigators:

Project Lead:
Dr. Jean-Simon Diallo

Dr. Christopher Boddy

Dr. Jeffrey Smith

Dr. Jennifer Quizi

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

uOttawa

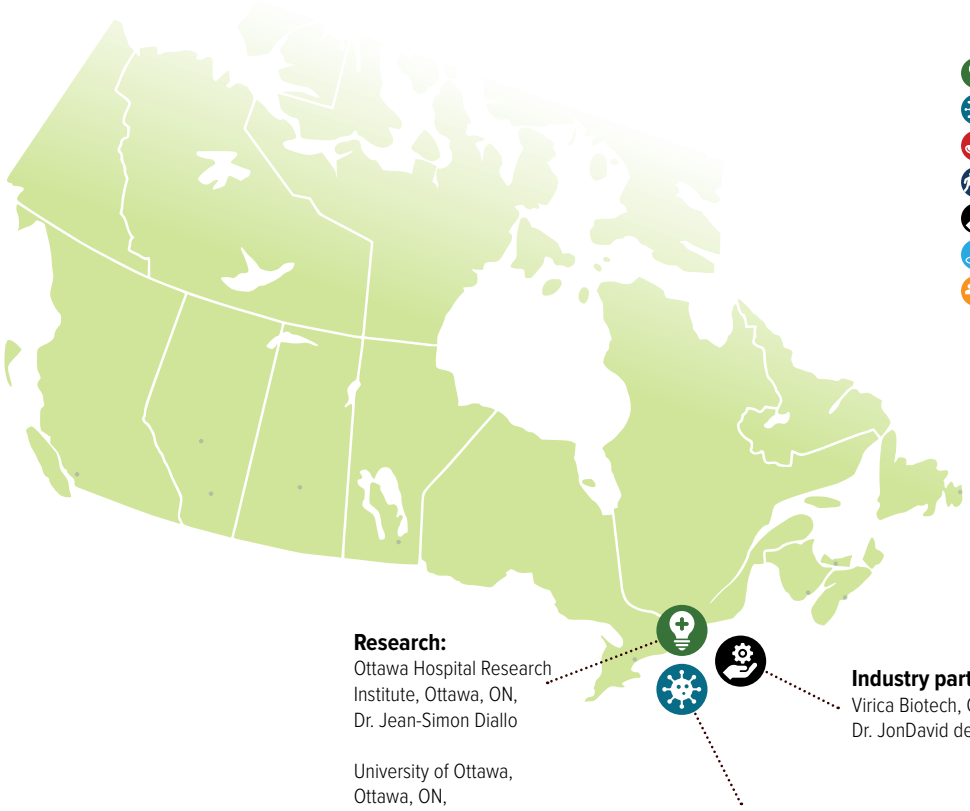
Carleton University

1
Partners

virica

About the project:

The research team aims to enhance the production of Lentivirus (LV), a crucial component in CAR T cancer therapies. CAR T therapy shows great promise in treating cancer, but its high cost is largely due to the complex and inefficient processes involved in producing LV. To address this, the will will test next-generation Viral Sensitizers (Gen 2.0 VSEs)—simple additives that can significantly boost LV production efficiency. Their project focuses on four key milestones: 1. Optimizing Gen 2.0 VSE Formulation: identification and validation of new VSEs that improve LV production in different cell systems, essential for large-scale manufacturing. 2. Developing Analytical Methods: creating tests to monitor and measure VSEs during LV production, ensuring removal at the final stage. 3. Toxicological Evaluation: compilation of safety data to confirm that Gen 2.0 VSEs are safe for use to make LV destined for human therapy. 4. Establishing GMP-compliant Manufacturing: development of a scalable, high-quality process for producing Gen 2.0 VSEs, making them suitable for clinical applications. By improving LV production and reducing costs, our project aims to make CAR T cell therapies more accessible. The innovative use of VSEs as simple, effective additives not only strengthens Canada's position in biomanufacturing but also has the potential to significantly impact the global biotechnology industry.



Partner:

Virica Biotech

Total Pledged Partner Contribution: $788,346

Total Pledged Matched Contributions: $788,346

Key Deliverables

1. A Gen 2.0 VSE formulation, increasing lentivirus (LV) yields at least 2x post-purification
2. HPLC and mass spectrometry-based assays for detecting and quantifying Gen 2.0 VSEs in the bioprocess including LOD and LLOQ
3. A comprehensive toxicological information package for selected Gen 2 VSE
4. Large-scale manufacturing and GMP clinical-grade batch of selected Gen 2.0 VSE
5. State of technology readiness to implement the developed Gen 2.0 VSE technology at the OHRI BMC to produce LV in GMP for Canadian CAR T / CAR-NK trials

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

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