CRCHUM

CENTRE DE RECHERCHE
Centre hospitalier
de l'Université de Montréal

CANCER

CELLULAR IMMUNOTHERAPY

New generation of cancer therapy

90% of cancer deaths are caused by solid organ tumours that fail to respond to standard treatments.

For these stage 4 cancers, the most effective cellular immunotherapy is based on the use of T-cells, immune cells that infiltrate tumours that have spread as metastases.

These "Tumour-infiltrating lymphocytes" or TILs are too few in number and inhibited in tumours. The therapy therefore consists of extracting these immune cells from a patient's tumour, purifying them and multiplying them in vitro until there are billions of them. They are then transfused into the patient.

In oncology, this emerging personalized therapy makes it possible to destroy cancer cells wherever they are in the body. It has been shown to effectively treat skin cancer (melanoma) and is currently being tested in other types of cancer.

US$

15.4 billion

Size of the global cancer cellular immunotherapy market by 2028

90 %

of cancer deaths are caused by solid organ tumours

20,000

people in Quebec have solid tumours that no longer respond to standard treatments

Meet a therapeutic need

20,000 people in Quebec have solid tumours that no longer respond to standard treatments. The only possibilities for them are to benefit from palliative care or participate in clinical studies.

In Canada, cellular immunotherapy is still underdeveloped and the number of studies remains very low.

In Quebec, the CHUM and its research centre (CRCHUM) want to change the situation. They are positioning themselves to become a **recognized cellular immunotherapy centre** and to offer patients the most promising immunocellular products possible.

Already at the forefront

AUGUST 2022

The CHUM becomes the **first hospital centre in Quebec** to have administered a patient their TILs as part of a clinical study led by Dr. Simon Turcotte.

2024

A GROWING NUMBER OF CLINICAL STUDIES

Four new cellular immunotherapy studies are underway at the CHUM and offer different types of cellular immunotherapy to people with various kinds of cancers.

THE OPENING OF A CELLUAR PRODUCTION UNIT

The CHUM is one of the rare Canadian hospital centres to be able to produce immunocellular products for clinical studies thanks to its Cell Production Unit, located in the operating room and equipped with two cleanrooms.

AIMING FOR THE BEST STANDARDS

The CHUM has initiated the **accreditation process** by the Foundation for the Accreditation of Cellular Therapy (FACT) to offer cellular immunotherapy according to the best international standards.

Expertise and recognition

CENTRE OF EXPERTISE

Within the Unit for Innovative Therapies dedicated to phase I and phase II clinical studies, Dr. Rahima Jamal and Dr. Simon Turcotte have set up a team with unique talents to safely conduct cellular immunotherapy studies.

A CRITICAL MASS OF SPECIALISTS

Hematologists, oncologists, surgeons, nurses specialized in cell infusion, quality control experts, cell production technicians, data managers and researchers in the immunology of solid tumours all come together at the CHUM to test and improve the effectiveness of cellular immunotherapy for cancer.

SUPPORT FROM THE RESEARCH ECOSYSTEM

In addition to the CHUM, the Canadian Institutes of Health Research, the Fonds de recherche Québec—Santé (ThéCell network — Dr. Simon Turcotte, co-leader of the Cell therapy: hematology, oncology and immunology axis) and foundations support the cancer cellular immunotherapy program, as do Héma-Québec and the largest active biotechnology companies in this emerging field.

In 2024, this support will enable the launch of four cellular immunotherapy studies for people with lung cancer, skin and eye melanoma, and gastrointestinal, pancreatic, bile duct and ovarian cancers.

High-level cellular production capacities

The CHUM is currently **the only centre in Quebec with expertise in TIL cell production** and in treating patients with this approach. In May 2024, the CHUM was designated Centre de Référence for immunocellular therapy by the Quebec Ministry of Health.

Dr. Turcotte's team was the **first in Canada** to acquire a clinical-grade cell sorter. This equipment has made it possible to develop a cellular product made of TILs that is more responsive to tumours and personalized for each patient.

SHARING KNOWLEDGE AND EXPERTISE

To improve access to this therapy in the health system, the CHUM and the CRCHUM are committed to building pan-Canadian academic and public expertise.

Through the largest cell therapy network in Canada, BioCanRx, the teams of Dr. Turcotte and the Ottawa Hospital are launching a first TIL-type study for patients with bile duct cancers. With the transfer of the CHUM's knowledge, Ottawa team will be able to locally produce TILs for clinical use.

Ultimately, the expansion of this network will allow larger multicentre studies to emerge and will allow the treatment of a larger number of people, particularly for early indications as standard treatment.

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