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

Catalyst Program

Targeted RadioLigand (tRL) and checkpoint blockade for metastatic castrate resistant prostate cancer

Jan. 17, 2017 to Dec. 31, 2019

Highlights

- Combines radioactive drugs and immunotherapy towards a potentially more effective treatment for metastic castrate resistant prostate cancer
- Collaboration involving experts spanning three different academic fields, medical isotopes/imaging, radiation biology and immunology, with a key partnership in the pharmaceutical sector
- Uses the application of therapeutic antibodies to combine the benefits of radiation on anti-tumour immune response and create a Canadian made platform to evaluate future pipeline tRLs to treat mCRPC and other cancers

Biotherapeutics: **Check-point blockades**

Project value: **$399,996**
BioCanRX contribution: **$199,996**

targeted cancers: **Metastatic castrate resistant prostate cancer (mCRPC)**
This project aims to develop a clinic ready ^{177}Lu-PSMA617 with preclinical data to inform the sequencing and timing with checkpoint blockade.

Partners: **4**

BioCanRx core facilities: **1**
Molecular & Cellular Immunology Core (Victoria)

BC Cancer Agency CARE + RESEARCH
BC CANCER FOUNDATION partners in discovery
AstraZeneca
PCFF Prostate Cancer Fight Foundation
RIDE FOR DAD

About the project

Prostate cancer is the most common cancer in men and the 3rd leading cause of cancer related deaths in Canadian men. Although treatments have improved, the reality is most men, despite receiving next-generation hormone and radiation therapies progress to late stage metastatic castrate resistant prostate cancer (mCRPC). These patients have limited options and new ways to tackle mCRPC are urgently needed.

The immune response in prostate cancer patient is often suppressed, and to date immunotherapy has had modest effectiveness in treating mCRPC. Emerging research has found that in some patients, local radiation (RT) can stimulate the immune system. There are also clear benefits of giving radioactive drugs to treat mCRPC10. Thus, the combination of radioactive drugs and immunotherapy could be more effective than either treatment alone.

This project's goal is to develop a combined radioactive therapeutic agent that is given appropriately in sequence and dose to treat mCRPC. Implementation involves the delivery of radioactive molecules to target tumor cells found in both the prostate as well as at distant metastatic sites (e.g. bone, lung) in combination with checkpoint inhibitors, a new class of powerful drugs that activate the immune system. This project is a collaboration involving experts spanning three different academic fields, medical isotopes/imaging, radiation biology and immunology, with a key partnership in the pharmaceutical sector. Currently, there are no preclinical or clinical studies testing this combinatorial approach.

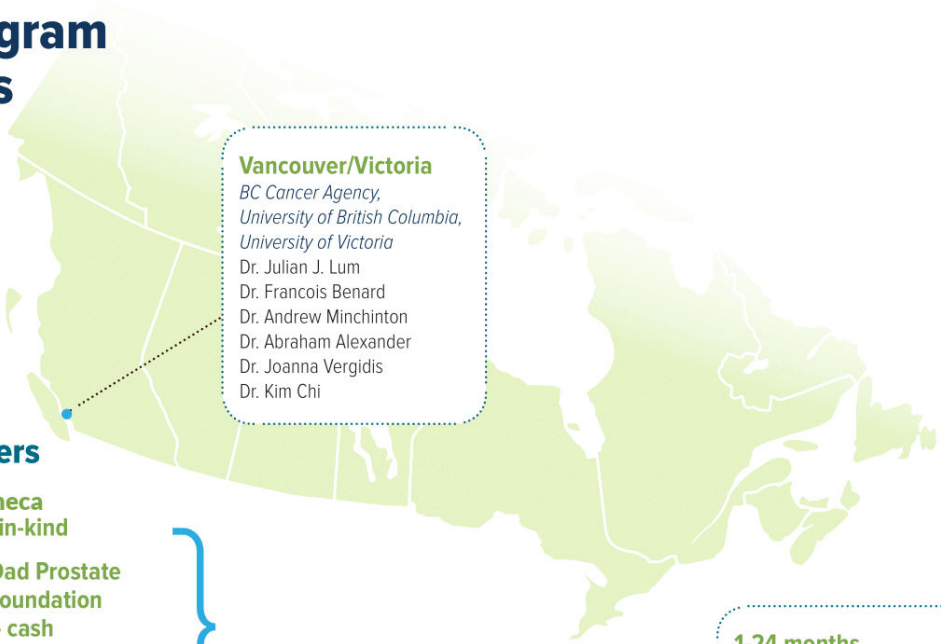
Key investigator

Project lead:
Dr. Julian J. **Lum**

Principal Investigators:
Dr. Francois **Benard**
Dr. Andrew **Minchinton**

BC Cancer Agency CARE + RESEARCH
UBC
University of Victoria

Catalyst Program Investigators



Vancouver/Victoria
BC Cancer Agency, University of British Columbia, University of Victoria
Dr. Julian J. Lum
Dr. Francois Benard
Dr. Andrew Minchinton
Dr. Abraham Alexander
Dr. Joanna Vergidis
Dr. Kim Chi

Partners

AstaZeneca
$39,000 – in-kind

TELUS Ride for Dad Prostate Cancer Fight Foundation
$13,678 – cash

BC Cancer Agency
$64,850 – in-kind

BC Cancer Foundation
$82,472 – cash & in-kind

Key Milestones

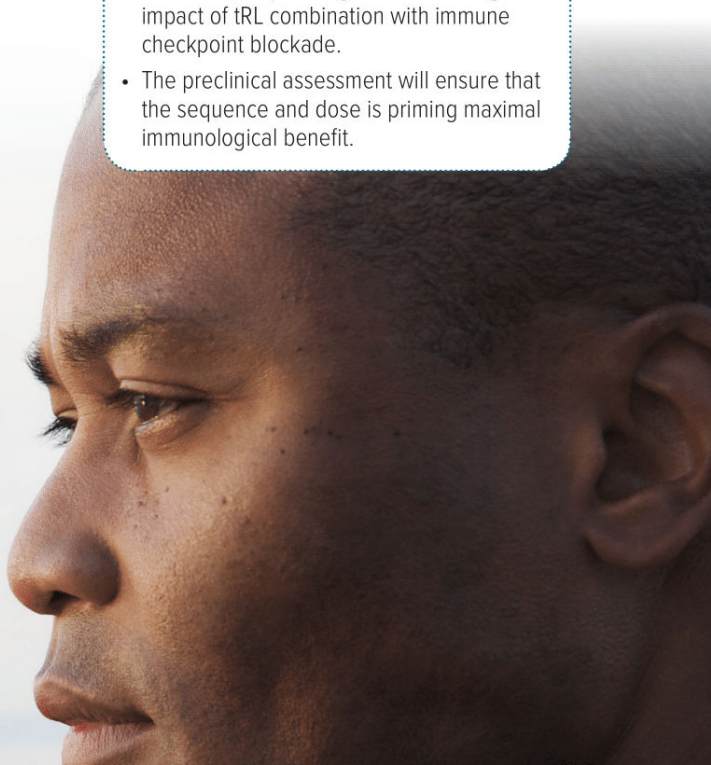
1-24 months
- Synthesize ^{177}Lu-PMSA617 and evaluate this compound in a preclinical immune competent mouse model of mCRPC.
- Begin feasibility and scale up to seek Canadian regulatory approval for use in humans.

6-24 months
- Evaluate extravascular distribution and DNA damaging activity in preclinical tumour models to guide drug dose and administration.
- Test dose, sequencing and immunological impact of tRL combination with immune checkpoint blockade.
- The preclinical assessment will ensure that the sequence and dose is priming maximal immunological benefit.

About, continued...

There is a growing appreciation that combination therapy is necessary to overcome immune suppression in prostate cancer. Recently, targeted radioligands (tRL) such as ^{177}Lu-PSMA617 have shown promise in treating mCRPC. This tRL has significant advantages over local RT by systemically targeting disseminated tumor cells. Thus, the goal of this project is to develop ^{177}Lu-PSMA617 in combination with checkpoint blockade for the treatment of mCRPC. They hypothesize that the combination may improve the efficacy of both agents when given together for the treatment of mCRPC.

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



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