BioCanRx
Biotherapeutics for Cancer Treatment
Biothérapies pour le traitement du cancer

Catalyst Program

Creating T-cell receptors that react to specific tumour antigens for improved adoptive T-cell therapy

July 1, 2015 to June 30, 2017

Highlights

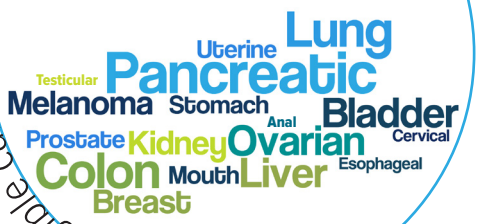
- Develops novel Canadian technology to improve anti-cancer effectiveness of T cells used for adoptive cell therapy
- Potential for more anti-tumour response with less toxicity for multiple forms of cancer

Biotherapeutics: 1

TCRs
T-cell receptors sensitive to NY-ESO-1 and MAGE-A3 antigens

Eligible cancers:

151,450
new cases of these cancers in 2015



Project value: **$400,001**
$200,001 from BioCanRx

$200,000
TaKaRa

Partners: 1

Key investigator:
Dr. Naoto **Hirano**
UHN Princess Margaret Cancer Centre

About the project

Adoptive T-cell therapy is an emerging cancer immunotherapy that has shown great promise in recent early phase clinical trials. However, for any given cancer, only a small proportion of T cells within the tumour are actually programmed to recognize the cancer as a threat. To improve effectiveness of enlisting T cells in the fight against the tumour, there is a need to expand the population of T cells programmed to attack the targeted cancer, all without worsening side effects for patients.

Dr. Hirano's lab has developed a technology to improve the quality of T cells by cloning T-cell receptors (TCRs) that are very sensitive to specific antigens found on a cancer, even more so than the T cells that naturally occur in a tumour. After creating these super cancer-sensitive TCRs, they are combined with T cells to create a fresh and active population of cancer-fighting T cells for delivery into a patient.

This project proposes to create TCRs that would target a wide range of cancer types. Specifically, Dr. Hirano's group will create TCRs that are sensitive to the antigens NY-ESO-1 and MAGE-A3.

Catalyst Project investigators

Ottawa
The Ottawa Hospital, University of Ottawa
Scientific investigator
Dr. John Bell

Toronto
Princess Margaret Cancer Centre, University Health Network
Scientific investigator
Dr. Naoto Hirano
Clinical investigator
Dr. Marcus Butler

BioCanRx
$200,001
approved on
June 10, 2015

BioCanRx partner

Takara Bio, Inc.
$200,000 for research reagents, plus expertise and resources for technical and product development

July 1, 2015
- Project starts

July 1, 2015 to June 30, 2016
- A new technology to isolate a library of tumour-specific TCRs with a broad range of affinity

July 1, 2016 to June 30, 2017
- Create a TCR with minimal cross-reactivity and potent anti-tumour reactivity specific for NY-ESO-1 peptide presented by HLA-A2 molecules
- Create a TCR with minimal cross-reactivity and potent anti-tumour reactivity specific for NY-ESO-1 peptide presented by HLA-DP4 and other class II molecules
- Create a TCR with minimal cross-reactivity and potent anti-tumour reactivity specific for MAGE-A3 peptide presented by HLA-DP4 and other class II molecules

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

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