

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

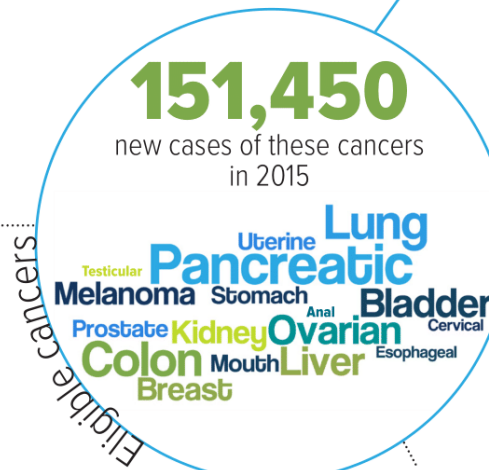
July 1, 2015 to June 30, 2017

**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



Project value  
**\$475,001**  
 \$200,001 from BioCanRx

\$275,000



Partners  
**1**

Key investigator  
 Dr. Naoto **Hirano**

**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.**

**\$275,000** 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.

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

