Cancer Council Victoria

Research We Fund

Project:

Preventing resistance to targeted therapy in melanoma

Research team:

Dr Lorey Smith and Dr Brendon Monahan

Institution: Peter MacCallum Cancer Centre

Cancer type: Melanoma

Years funded: 2020-2022

What is the project?

Targeted therapy blocks the growth and spread of cancer while limiting damage to healthy cells, but cures remain uncommon. The success of targeted therapies in melanoma patients is limited by persistence of residual disease that adapts to allow cancer cell survival, eventually leading to relapse.

We have recently discovered a way that melanoma cells adapt in response to targeted therapy involving changes to their metabolism, the chemical processes used to produce energy that drives their growth.

We hypothesise that switching these pathways off would prevent therapy-induced adaptation, and we aim to develop a new combination therapy to prevent drug resistance and achieve more cures.

What is the need?

29 targeted therapies have been approved worldwide. Their major benefits are high response rates and manageable toxicities, but cures remain uncommon due to the development of drug resistance. New combination therapies that prevent resistance to targeted therapies would be transformative. Melanoma is the fourth most common cancer in Australia, and as many treated with targeted therapies are classified as advanced, this project will directly benefit those with the lowest survival. These studies could not only validate a new therapeutic target to prevent targeted therapy resistance in melanoma, but they could also give a blueprint to address similar challenges in other cancers, ultimately significantly improving cure rates.

What are you trying to achieve?

Successful completion of this project will validate a new therapeutic target to prevent disease relapse for targeted therapy in melanoma, and to provide the evidence base to begin targeting metabolism with new and existing drugs, to cure more cancer patients.

Project timeline

Timeline	2020	2021	2022
Begin analysis of metabolism and RNA processing during drug-induced adaptation, as well as patient sample collection			
Validate targets, and integrate systematic analyses of metabolism and RNA processing			
Identify and validate key candidates from systematic analyses using *in vivo* models, analyse and integrate patient samples with RNA networks, prepare submissions for further funding			

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