

Fellowship title	Empowering the immune system to attack melanoma and other advanced cancers
Fellow	Dr Jason Waithman
Institution	Telethon Kids Institution
Research description	<p>Melanoma is Australia's 3rd most common cancer resulting in the 9th highest number of cancer-related deaths. There is traditionally poor prognosis once it spreads. New treatments that harness the immune system can cure many people with advanced melanoma. However, there is urgent need to help patients that aren't responding to these immunotherapies. To address this, the research strategy focuses on the following aims: to improve the body's immune system to fight cancer and thereby increase the number of patients surviving; to help the immune system to better detect and attack cancer cells, which leads to saving lives; to understand how the immune system can be improved to stop the spread of melanoma cancer in the brain - this is critical as it is a very poor prognosis once in the brain; and to understand how specific immune cells might offer protection from skin cancer and keep tumours dormant, thereby directly saving lives.</p> <p>The purpose of this research is to gain more insight into how the immune system interacts with cancer cells and develop new ways to make the immune system fight cancer. To do this the research work focuses on T cells, which recognise and marshal an attack against diseased cells.</p> <p>The team are engineering T cells with additional capabilities, making them more able to eradicate tumour cells. They are also generating a vaccine that causes T cells to multiply so they can overwhelm cancer cells and eliminate them.</p> <p>As melanoma frequently spreads to the brain the team are also investigating how an immune response is directed against tumours within the brain and testing whether the new therapies are effective.</p> <p>Also, tumours can remain dormant for prolonged periods of time and patients can live normally. Little is known about how this occurs. The team will identify the role of the immune system in tumour dormancy, which will lead to new therapeutic approaches that convert aggressive cancer into a stable chronic condition.</p> <p>Through this work the intention is to identify multiple ways to drive and enhance T cell immunity against cancer. This research will save lives by improving the overall survival rate, especially in patients currently deemed terminal and non-responsive to immunotherapy.</p>
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