Cancer Council Victoria

Research We Fund

Project:

Loss of a protein in host cells surrounding a tumour results in spread of breast cancer

Research team:

Prof Robin Anderson, Prof Robert Parton

Institution: Olivia Newton-John Cancer Research

Cancer type: Breast

Years funded: 2019–2021

What is the project?

Deaths from breast cancer are caused primarily by the spread of the cancer to distant tissues, compromising their function. We have shown that the loss of a protein called caveolin-1 from normal cells surrounding the tumour predicts that the tumour will spread. Our goal is to understand why the loss of this protein causes the tumour to spread and to use this knowledge to develop a targeted therapy for patients whose tumours are shown at first diagnosis to have lost the expression of this protein.

What is the need?

While improvements in early detection and treatment of breast cancer have successfully extended patient survival, there remains no cure for when the disease has spread to other tissues and organs, a process called metastasis.

In fact, metastasis is the major cause of cancer related deaths for breast cancer patients and there has been no increase in survival of patients with metastatic breast cancer over the past 20 years. With more than 18,000 new cases of invasive breast cancer diagnosed annually in Australia and over 3000 deaths, the identification and evaluation of new therapies to stop the spread of breast cancer is a high priority.

What are you trying to achieve?

In our original study we found there was a loss of caveolin-1 from normal cells in breast cancers in about 40% of the 173 samples we tested, and this was associated with a worse overall survival rate. We hope that we can develop a treatment that disrupts this, and ultimately to see a reduction in the number of deaths in patients with metastatic breast cancer.

Project timeline

Timeline	2019	2020	2021
Test an experimental therapy that will investigate Gas6 and caveolin-1.			
Continue analysis and look at Gas6 levels in breast cancer samples, checking for co-localisation with caveolin-1 and correlate the results with progression-free survival in this cohort of samples.			
Look at how we detect these proteins in tumour sample and continue analysis.			

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