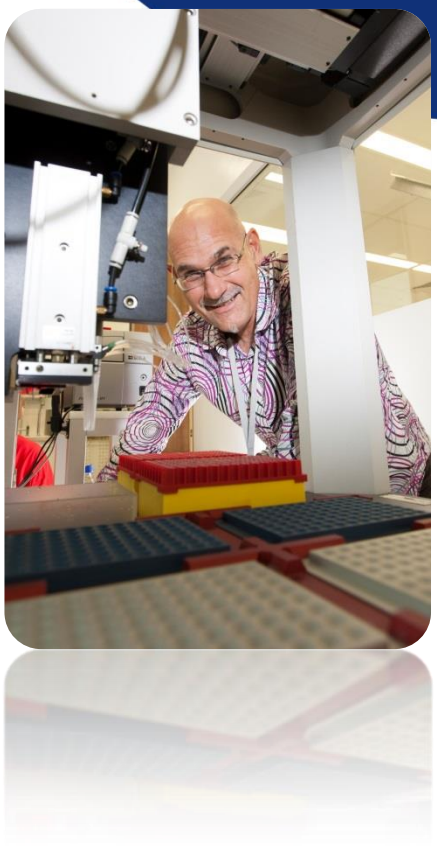
Changing the biology of cancer to make it vulnerable to treatment



Professor Brian Gabrielli of Mater Research and his team have defined the markers that promote sensitivity to Aurora kinase inhibitors. Aurora kinases are enzymes that play an important role during cell division. Inhibiting this process has shown promise in treating small-cell lung cancer, head and neck, and cervical cancers.

The team are investigating if using Aurora kinase inhibitors in conjunction with Checkpoint Kinase 1 Inhibitors (CHK1) can lead to improved tumour control as CHK1 is a key component of the body's ability to respond to DNA damage.

The team have shown that short term use of Aurora kinase inhibitors can change the biology of a tumour so that it is stressed by the process of replication.

Replication stress occurs during the process of DNA replication. DNA replication is a fundamental process of the cell as it duplicates its genetic material. DNA damaged during this process is called 'replication stress' and is present in a range of tumours. In cancer cells that divide rapidly, this presents a potential new avenue for treatment as replication stress is a target for CHK1 inhibitors.

Because the Aurora kinase inhibitors are only needed for a short period of time it does not allow the tumour to develop a resistance to the drug.

The team hope that using Aurora kinase inhibitors may help patients with a specific molecular defect in small cell lung cancer, head and neck, and cervical cancers to be responsive to other drugs.

By using these drugs together, it may be possible to change the biology of a tumour to be more susceptible to treatment.

This has the potential to broaden the number of people who can be treated by currently existing treatments.

Research is the most important tool we have in the fight against some of the major challenges facing healthcare today. Your donations to Mater Foundation are funding incredible advances that can change lives.