

PERSONALISED MEDICINE CAN CHANGE THE GAME

There are several treatment options available for breast cancer patients. And research has shown the best approach is to tailor treatment to individuals.



Gone are the days where medicine has a one-size-fits-all approach. Research has proven that breast cancer is far more complex – it's not one disease, but many, and requires personalised treatment that uses specific information about a patient's genetic signature and type of cancer. It considers the tumour's size, molecular makeup and chances of spreading, allowing doctors to customise treatment and maximise its effectiveness.

Personalised treatment not only helps patients to avoid harsh side effects, but also leads to fewer deaths and a better quality of life for people diagnosed with breast cancer.

The success of personalised medicine depends on identifying the right treatment for the right person at the right time. As breast cancer can vary and change genetically and biologically from one person to another, it can make identifying ideal treatments difficult.

While personalised drug screening has provided some excellent outcomes, it can take up to 12 months to determine the suitable treatment plan – which is far too long, when quick decisions are needed to stop the cancer in its tracks.

Determining the molecular makeup of tumours

Identifying a cancer's molecular makeup helps plan the best course of treatment. Often, these tests take place from a sample (biopsy) of the tumour and can indicate how to treat and stop spread most effectively.



HER2 status

This is a protein present on the surface of all breast cells. Cells with unusually high levels of HER2 are called HER2 positive cancers and result in uncontrolled growth and spread of tumours.



Hormone receptor status

Many breast cancers have hormone receptors that receive signals from estrogen and progesterone, which help these cancers to grow. These cancers are referred to as ER-positive or PR positive.



Triple negative breast cancer

These are tumours without estrogen receptors, progesterone receptors or HER2. They are typically more aggressive and more common among younger women.

Research has come a long way for doctors to identify the molecular subtype of a breast cancer. Knowing this is key to determining the right treatment for a patient. Understanding these subtypes at an even deeper level has the potential to influence treatment that is unique to each individual.

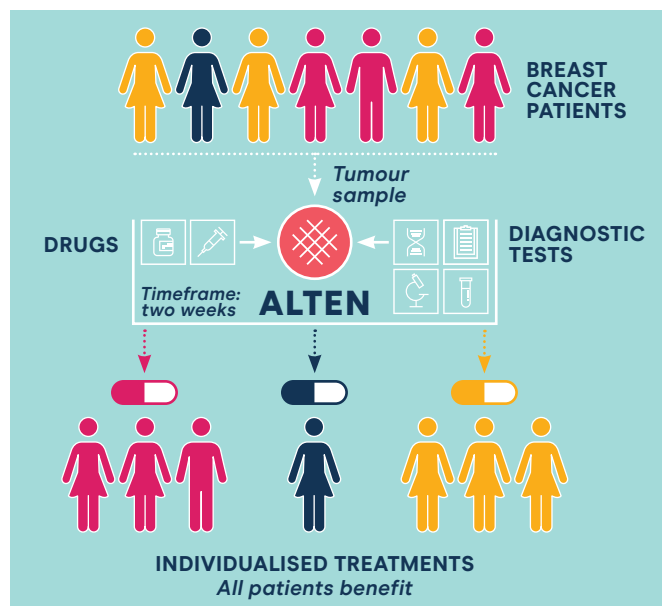
ACCELERATING PERSONALISED BREAST CANCER TREATMENT

Personalised medicine uncovers great promise in treating breast cancer patients. And NBCF-funded researcher Associate Professor David Gallego-Ortega (pictured) has developed a new device to take treatment to a new level.



Personalised medicine to treat breast cancer involves testing different drugs on a patient's tumour in the lab – allowing doctors to identify the best treatment plan. However, the current process of testing is too slow to inform real-time clinical decisions.

Associate Professor David Gallego-Ortega has developed a game-changing device called the ALTEN (Alginate-based Tissue Encapsulation) to test multiple treatment strategies using a sample of a patient's tumour.



The ALTEN device can maintain a tumour sample, keeping it alive in the laboratory by mimicking its natural human environment. This allows for sensitive, accurate and rapid testing of multiple anticancer drugs, delivering results in two weeks, post-surgery.

“This high-resolution analysis will produce detailed information of the therapeutic response to multiple drugs, and ultimately guide therapeutic decisions,” Associate Professor Gallego-Ortega says.

In his study, Associate Professor Gallego-Ortega aims to translate new technological developments and findings into personalised outcomes for patients. This means people with breast cancer will receive the right treatment at the right time, reducing the risk of overtreatment and its harmful effects.

“I feel very grateful for your support of research. It has been essential for translating years of laboratory work into tangible outcomes. I am looking forward to putting all we have learned into practice and maximising the benefit for patients with breast cancer.”

– Associate Professor David Gallego-Ortega, NBCF-funded researcher



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