

Researchers find DNA marker that predicts breast cancer recurrence

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Medical researchers at the University of Alberta tested the DNA of more than 300 women in Alberta and discovered a 'genetic marker' method to help accurately profile which women were more apt to have their breast cancer return years later.

Sambasivarao Damaraju, a professor with the Faculty of Medicine & Dentistry, and at the Cross Cancer Institute just published his team's findings in the peer-reviewed journal, *PLoS One*. Using a simple blood test, Damaraju and his team, which included his PhD student Yadav Sapkota, scanned the entire human genome of 369 [women](#) who had been diagnosed with breast cancer. Of those, 155 had their cancer come back and 214 did not.

"If we can accurately predict which women are at high risk of breast [cancer recurrence](#), it gives the physicians and oncologists treating those women time to design a more aggressive therapy in hopes of preventing the cancer from coming back," says Damaraju, who works in the Department of Laboratory Medicine & Pathology. "Treatment strategies could be tailor made for these women based on their genetic make-up and how susceptible it makes them to breast cancer recurrence."

Damaraju and his team focused their research on good prognosis breast cancer – cancer that has a high success rate in terms of initial recovery and treatment. About 70% of all breast cancers fall into this category. Yet despite the high success rate with initial treatment for this type of breast cancer, the overall numbers of those who died or had their cancer

spread in this 'good prognosis' group are substantial. The numbers are high simply because so many people have this common 'good prognosis' cancer.

Currently, treatment options for breast cancer patients are based on what doctors know about the tumour itself – its size, grade and the absence or presence of certain markers within the tumour. Damaraju noted there are patients who are given an excellent prognosis based on what doctors see within the tumour, yet the cancer comes back. And other women remain cancer free even though their doctors said they had a poor prognosis based on information gleaned from the tumour. Damaraju thinks the accuracy of prognosis could be improved by complementing tumor based markers with the [DNA](#) marker that can be found through a simple blood test.

Damaraju and his team are continuing their research in this area and would like to reconfirm their findings in a larger study, pending further funding. The results from that study could be published in about three years, and he suspects about two years after that, the DNA predictor test could be tested in prospective clinical studies prior to making them widely available for women.

The research was funded by the Canadian Breast Cancer Foundation – Prairies/NWT region, and the Alberta Cancer Foundation.

"The impact of Dr. Damaraju's significant discovery on personalized treatment for breast cancer patients is substantial," says Canadian Breast Cancer Foundation – Prairies/NWT Region CEO Trish Bronsch.

"Knowing individual risks of breast cancer and recurrence provides doctors and oncologists with a better picture in which they can create a treatment plan to fit personal needs. We are very excited to have been able to help fund Dr. Damaraju and his team to this discovery."

"We are pleased to see donor dollars having a direct impact on outcomes that are important to Albertans—in this case earlier detection and improved treatment options for breast cancer recurrence," says Myka Osinchuk, CEO of the Alberta Cancer Foundation. "We are excited to follow Dr. Damaraju and his team to ensure those women successfully treated for [breast cancer](#) continue to live cancer-free lives.

Provided by University of Alberta Faculty of Medicine & Dentistry

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