Researchers ID genetic marker for sporadic breast cancer

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Medical researchers at the University of Alberta have pinpointed a genetic marker for sporadic breast cancer – one of a handful identified to date in Caucasians.

Researchers have identified many genetic markers for familial breast cancers, but not for sporadic breast cancer which accounts for 80 per cent of all cases. Sambasivarao Damaraju, a professor with the Faculty of Medicine & Dentistry and a researcher at the Cross Cancer Institute, worked with his team to scan the DNA of about 7,200 Alberta women, including those who have had sporadic breast cancer and those who have not had cancer. Their genomes were scanned from DNA isolated from blood.

The results? Women who had sporadic breast cancer frequently had a genetic marker on chromosome 4 – a marker that has never been associated with familial breast cancer cases.

"The frequency of this marker occurring was statistically significant," says Damaraju, who works in the Department of Laboratory Medicine & Pathology. "Genetic factors that predispose women to breast cancer is a subject of intense investigation in the research world. While 60 to 70 genetic risk factors have been identified for familial breast cancer, we don't know much about the genetic risk factors for sporadic breast cancer. So this finding is exciting, and shows us more research is needed in this area."

The team's findings were recently published in the peer-reviewed journal, *PLoS One*. Damaraju noted the team, which included co-author John Mackey and PhD student Yadav Sapkota, was multi-disciplinary, including basic scientists, medical oncologists, biostatisticians and epidemiologists. He also acknowledged the initial contributions to this work from previous trainees, Malinee Sridharan and Badan S. Sehrawat. Overall, he collaborated with colleagues from the U of A's School of Public Health, the Department of Oncology, and the Department of Agricultural, Food and Nutritional Sciences, as well as colleagues from the Cross Cancer Institute and Alberta Health Services.

Damaraju and his team are continuing their work in this very young field (the first genetic marker for breast cancer predisposition was reported in 2007). He says more research is needed to identify genetic markers for sporadic breast cancer, but that large scale screening to identify those at risk is still years away.

Lifestyle factors account for two-thirds of the risk associated with breast cancer, while the remaining one-third of the risk is attributed to genetics, Damaraju noted.

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

"We are pleased to see donor dollars having a direct impact on outcomes that are important to Albertans – in this case identifying a genetic marker of a specific breast cancer may lead to earlier detection and improved treatment options," says Myka Osinchuk, CEO of the Alberta Cancer Foundation. "For years, the Alberta Cancer Foundation has invested in the 'biobank' that has given this research team access to the blood and tissue samples used in this study, and we recently confirmed our support with more funding. It is exciting to see how this comprehensive collection of tumour and tissue samples is starting to

provide answers to key clinical questions."

Tracy Sopkow, VP, Cause Related Programs with the Canadian Breast Cancer Foundation – Prairies/NWT Region, added: "Our organization believes in supporting innovative research that has the potential to make a real, tangible difference. We're proud to support Dr. Damaraju and his team in their quest to identify genetic markers for sporadic breast cancer because the knowledge gained has the potential to change the future for thousands of women."

Provided by University of Alberta Faculty of Medicine & Dentistry