



NEWS RELEASE

FOR IMMEDIATE RELEASE

December 10, 2015

BC scientists produce breast cancer from normal human breast cells using a single cancer gene

Vancouver – A team of scientists at the BC Cancer Agency and the University of British Columbia have made an important advance towards understanding the cellular changes that can lead to human breast cancer.

Published in print today in the leading scientific journal, *Nature*, this exciting study shows that introducing a single mutant gene into cells isolated from normal human breast tissue can cause them to rapidly form continuously growing breast cancers in mice that lack an immune system. This finding was a surprise as it disproved the longstanding assumption that the development of human breast cancer requires a long time to accumulate multiple genetic changes.

“Groundbreaking innovations like these position B.C. as a leader in breast cancer research,” said Health Minister Terry Lake. “We’ve seen how important cutting-edge life science and genomic work is to save the lives of British Columbians facing a breast cancer diagnosis. Together we are creating positive outcomes.”

By the time a breast cancer first becomes apparent, it usually already contains a mixture of cell populations with different features and different responses to existing therapies. It has therefore been difficult to determine how these different features are acquired. In this study, the BC Cancer Agency researchers used a novel method called DNA barcoding that allowed them to track the growth of many individually transformed cells after they were transplanted together into a single mouse. This allowed the researchers to observe how breast cells change their growth even before they have become fully malignant.

“We are excited to have developed an approach that, for the first time, makes it feasible to study the initial changes that cause a normal human breast cell to become malignant,” said senior author Dr. Connie Eaves, distinguished scientist at the BC Cancer Agency and a professor in UBC’s Department of Medical Genetics. “This is important because this methodology can now be widely used to perform experiments that were previously thought to be impossible.”

“There is tremendous potential for this approach to bring about improved outcomes based on the identification of early changes that should be shared by all cells in a given breast tumour,” said Eaves. “Such changes could also provide new indicators for identifying breast cancers at a much earlier stage when they might be more effectively treated.”

The research was performed in Vancouver at the BC Cancer Agency’s Terry Fox Laboratory and received funding from the Canadian Cancer Society Research Institute, the Canadian Breast Cancer Foundation, the Canadian Breast Cancer Research Alliance and the Canadian Institutes of Health Research.

Quick facts

- Dr. Eaves is a recognized world authority on breast stem cells, that followed her earlier research on stem cells of the blood-forming system and their leukemic counterparts
- The work published today on human breast cancer formation follows landmark studies from her group that first identified stem cells of normal mouse and human breast tissue

The BC Cancer Agency, an agency of the Provincial Health Services Authority, is committed to reducing the incidence of cancer, reducing the mortality from cancer, and improving the quality of life of those living with cancer. It provides a comprehensive cancer control program for the people of British Columbia by working with community partners to deliver a range of oncology services, including prevention, early detection, diagnosis and treatment, research, education, supportive care, rehabilitation and palliative care. For more information, visit www.bccancer.bc.ca

- 30 -

Contact:

Kevin Sauve

Communications Officer, BC Cancer Agency

Email: kevin.sauve@bccancer.bc.ca

Phone 604-675-8257