

**UNDER EMBARGO UNTIL 5:00 AM ET NOVEMBER 14, 2014
WESTERN UNIVERSITY**

Cutting-edge computer software helps pinpoint aggressiveness of breast cancer tumours

Researchers at Western University are using cutting-edge genetic mutation-analysis software developed in their lab to interpret mutations in tumour genome that may provide insight into determining which breast cancer tumours are more likely spread to other parts of the body and which ones won't.

Their findings will be published this week in the journal, *Nature Scientific Reports*.

"We are using a unique software program in our lab that looks at a type of mutation called a splicing mutation that is typically overlooked using current methods," said lead author on the study, Stephanie Dorman, a PhD student in the department of biochemistry at Western University's Schulich School of Medicine & Dentistry. She said that where previous genetic studies of 445 tumours detected 429 of these splicing mutations, the Western-developed analysis software was able to find more than 5000.

Using this software and human tumour tissue sample genetic data from The Cancer Genome Atlas, the research team pinpointed that mutations in the Neural Cell Adhesion Molecule (NCAM) and other related genes in NCAM biology were present at a much higher rate in tumours which had metastasized to the lymph nodes than those that did not. NCAM, typically found in neural cells is also highly expressed in breast tissue, and is involved in communication between cells.

"We believe that mutations in these biological pathways in some patients might be causing some of the characteristics of the tumour that enable it to migrate to other parts of the body," said Dorman.

Dr. Peter Rogan, principal investigator on the study and a Professor in the Departments of Biochemistry and Computer Science, hopes that these findings will allow oncologists and clinical laboratories looking for these mutations in tumour biopsies to predict which women are at higher risk for more aggressive tumours that might metastasize.

"One of the big issues in breast oncology is that women are sometimes treated with chemotherapy even if their tumour isn't going to metastasize," said Rogan. "The ideal situation would be to be able to identify those patients where the side-effects and potential negative consequences of chemotherapy following surgery can be avoided or at least, minimized."

Dr. Rogan is supported by the Canadian Breast Cancer Foundation, Canadian Foundation for Innovation, Canada Research Chairs Secretariat and the Natural Sciences and Engineering Research Council of Canada. Ms. Dorman has received fellowships from the Ontario Graduate Scholarship Program, the Pamela Greenaway-Kohlmeier Translational Breast Cancer Research Unit, and the CIHR Strategic Training Program in Cancer Research and Technology Transfer.

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