New genetic clues to breast and ovarian cancer

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(Medical Xpress)—A major international study involving a Simon Fraser University scientist has found that sequence differences in a gene crucial to the maintenance of our chromosomes' integrity predispose us to certain cancers.

Angela Brooks-Wilson, an associate professor in SFU's biomedical physiology and kinesiology department and a Distinguished Scientist at the BC Cancer Agency, is one of more than 600 scientists globally who contributed to this study.

Published in the March 27, 2013 online issue of the science journal *Nature Genetics*, the study is called "Multiple independent variants at the TERT locus are associated with telomere length and risks of breast and ovarian cancer".

The study found that variations in the sequencing of the TERT gene, which encodes an enzyme crucial to telomere maintenance, influence telomere length and our risk of getting breast and ovarian cancers.

Telomeres are structures that encapsulate our chromosomes' ends and are often compared to the plastic protectors on the ends of shoelaces.

These protective structures shorten in length over our lifespan and chromosomal cells should stop dividing when they become too short.

Scientists have known for a while that if chromosomal ends become

exposed this can lead to genetic damage and cancer. They've also estimated that up to 80 per cent of telomere-length variation is inherited.

This is the first study to connect that inheritance to predisposition to breast and ovarian cancer.

"This discovery helps us better understand the biology that underlies these cancers, as well as better predict who is likely to develop them," says Brooks-Wilson.

The SFU researcher is one of four investigators in the Ovarian Cancer in Alberta and British Columbia study (OVAL-BC). The interprovincial ovarian cancer study contributed samples and data to this new international study.

"About 140 individual smaller studies like OVAL-BC contributed samples from more than 150,000 women, data and analysis to make this new study happen. It's a remarkable example of international collaboration. I would say this is big science at its collegial best."

The OVAL-BC study, based at the BC Cancer Agency, is investigating ovarian cancer risk associated with environmental and genetic factors, and their interactions. Between 2002 and 2011, 4,000 women were recruited to participate in the population-based, case-control study, co-led by Nhu Le, Distinguished Scientist, Cancer Control Research, BC Cancer Agency and Linda Cook, professor, Division of Epidemiology & Biostatistics, University of New Mexico.

More information:
www.nature.com/ng/journal/v45/n4/full/ng.2566.html