

Study identifies genes linked to breast cancer in East Asian women

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A new study in East Asian women has identified three genetic changes linked to an increased risk of breast cancer. The research, led by Vanderbilt University investigators, was published online July 20 in *Nature Genetics*.

While breast cancer is one of the most common malignancies among women worldwide, most studies of the [genetic risk factors](#) for the disease have focused on women of European ancestry.

Given the differences in genetic heritage and environmental exposures between East Asian women and those of European ancestry, the investigators decided to conduct a study in East Asians to search for [genetic changes](#) that are linked to breast cancer development. The current study was conducted as part of the Asia Breast Cancer Consortium led by Wei Zheng, M.D., Ph.D., MPH, Ingram Professor of Cancer Research at Vanderbilt.

First author Qiuyin Cai, M.D., Ph.D., associate professor of Medicine, and colleagues performed a genome-wide association study of 22,780 women with breast cancer, and 24,181 control subjects who were recruited in 14 studies in Asian countries, including China, Japan, Korea, Malaysia and Singapore.

DNA for the gene assays was obtained through blood samples or buccal cells from mouthwash.

"We found DNA sequence changes in two genes, PRC1 and ZC3H11A, and a change near the ARRDC3 gene were associated with [breast cancer risk](#) and we identified a possible association with a fourth gene locus," said Cai. "Two of those sequence changes are in parts of the genome that regulate the expression of nearby genes."

ARRDC3 and PRC1 genes were previously linked to breast cancer growth and poor survival in [breast cancer patients](#), respectively. The role of ZC3H11A in breast cancer is unknown.

These DNA sequence changes may affect the regulation of cell growth, tumor cell migration and invasion, or metastasis.

These results were also replicated in a large consortium, including 16,003 breast cancer cases and 41,335 control subjects of European ancestry, as reported by the authors.

The risk of breast cancer conferred by each of these new genetic markers is relatively small. However, these new markers could be combined in the future with other breast cancer predictors, including genetic markers identified previously, to identify potentially high-risk women for screening and other prevention programs.

Results from this study provide additional insights into the genetics and biology of breast cancer. Based on these findings, the authors say further studies of possible mechanisms through which these loci and genes are involved in [breast cancer](#) development are warranted.

Provided by Vanderbilt University Medical Center

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