

Breast cancer subtypes originate from different biological pathways

April 25 2008

There is a biological distinction between breast cancers that depend on hormones and those that do not, according to research published Friday, April 25th in the open-access journal *PLoS Genetics*.

Scientists previously thought that hormone dependent breast cancers, which usually require treatment with surgery and anti-hormone drugs, originated from the same biological pathway as hormone independent breast cancers, which are treated with surgery and chemotherapy.

In the largest study of its kind, an international consortium of cancer researchers studied the genetic makeup of over 23,000 breast cancer cases.

Dr. Paul Pharoah, lead author based at the University of Cambridge, said: “We looked at five genetic variants associated with breast cancer to see if they were more likely to be found in hormone dependent or independent breast cancers. One common genetic variant, *FGFR2*, was strongly associated with hormone dependent breast cancer, but weakly associated with hormone independent cancer. This shows that they have distinct genetic origins, and are different diseases.”

Dr Lesley Walker, Cancer Research UK’s director of cancer information, said: “Scientists were previously unsure how different types of breast cancer developed. Although the findings won’t have any immediate effects on the treatment of women with the disease, they are important in helping to define the next steps in our research on the

causes of this major cancer.”

This discovery provides strong evidence that the subtypes originate from separate pathways and could guide future research into prevention and treatments for the cancer types as different diseases. This study was funded by Cancer Research UK.

Citation: Garcia-Closas M, Hall P, Nevanlinna H, Pooley K, Morrison J, et al. (2008) Heterogeneity of Breast Cancer Associations with Five Susceptibility Loci by Clinical and Pathological Characteristics. PLoS Genet 4(4): e1000054. doi:10.1371/journal.pgen.1000054
www.plosgenetics.org/doi/pgen.1000054

Source: Public Library of Science

Citation: Breast cancer subtypes originate from different biological pathways (2008, April 25) retrieved 19 April 2024 from
<https://medicalxpress.com/news/2008-04-breast-cancer-subtypes-biological-pathways.html>

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