

# **Sporadic breast cancer and somatic structural genetic variation; development of biomarkers of tumor predisposition and metastasis formation.**

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Each of us is made up of billions of cells, cells make up tissue and tissue comprises organs. Abnormal and uncontrolled growth of cells leads to cancer. Normal healthy cells grow in an organized way living for a certain period and then enter in to the stage of apoptosis which function as a programmed cell death. When these cells die body replaces them by another. But in cancer it's completely different, the cells won't die and keep on increasing its number and form a tumor. There are several different forms of cancer in which breast cancer is the most common kind of cancer in women and is the second most common form of cancer worldwide.

Only 5 to 10% of breast cancers are hereditary due to the predisposing genetic factors of germ line mutations in *BRCA1* and *BRCA2* genes and breast cancer developed in this way is known as inherited form. Whereas, above 90% of the women who develop breast cancer has no family history of the disease and breast cancer developed in this manner is known as sporadic breast cancer. Between a range of 15 to 20 cases are diagnosed in Sweden daily for breast cancer and it affects the middle aged and older women.

Very little attention has been paid to study the histopathologically normal breast tissue surrounding the primary tumor. The genetic variation of the histopathologically normal breast tissue surrounding the primary tumor and blood DNA from the patients affected with sporadic breast cancer will reveal the early genetic causes for development of the tumor. So the study and comparison of normal breast tissue, primary tumor, blood or skin from the same patient could reveal the reason behind disease development and will help improvement of new diagnostic practices and also be useful for future drug development. The results after the analysis of various tissues types which were collected from sporadic breast cancer patients confirms that large number of changes are being observed in the normal tissue of the breast which mean there exists a somatic predisposition in the formation of primary tumour and this supports our hypothesis.