

RGCB discovers a new breast cancer indicator

By Dr. Bilqeesa Bhat

Breast cancer is the most frequently diagnosed cancer among women worldwide. Accurate and early detection is a crucial factor in getting higher survival rates and decrease the number of breast cancer related deaths. Scientist at RGCB, Thiruvananthapuram, an autonomous institute of DBT, has discovered a new biomarker, Aprataxin PNK-like factor (APLF), associated with invasive breast cancer, and investigated its role in the spread of breast cancer to other parts of the body.

Cancer has become a global phenomenon posing huge health challenge to developing countries where access to screening is rare and treatment costly is too high. The World Health Organization (WHO) has reported 18.1 million cancer cases diagnosed in year 2018. Globally breast cancer incidence rate is 1.7 million per year.

Early diagnosis of breast cancer has increased the rate of successful treatment cases, however, the disease appearance at some other sites i.e., metastasis is an emerging challenge. In metastasis, cancer cells break away from the primary cancer site, travel through the blood/lymph system, and form same type of cancers in other parts of the body. Studies have indicated that breast cancer spreads to distant body parts including brain, lungs, bones, making it one of the diseases that are hard to treat.

Biomarker Aprataxin PNK-like factor is a DNA damage specific protein (histone chaperone) employed in packing of DNA that regulates mesenchymal-to-epithelial transition (MET) during cellular reprogramming. Cellular reprogramming is conversion of mature cells to immature cells which can give rise to number of new cells. MET is a reversible biological process that converts mesenchymal cells (bone, cartilage, lipid cells) into epithelial cells.

At RGCB Thiruvananthapuram, a team led by Dr. Debasree Dutta has investigated the role of APLF in epithelial-to-mesenchymal transition related to spreading of breast cancer. It was found that it is abundantly present in cancerous milk ducts when compared with normal breast tissue.

Study provided a novel evidences that APLF levels in breast tumors is responsible for spreading of breast cancer. Thus, APLF could be exploited as a biomarker for breast tumors detection among women. The research results have been published in a highly cited journal '*Molecular Cancer*'.

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