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DACH1 a key protein for tumor suppression in ER+ breast cancer

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Researchers from the Kimmel Cancer Center at Jefferson have identified a protein relationship that may be an ideal treatment target for ER+ breast cancer. The study was reported in the July 15 issue of *Cancer Research*.

DACH1, a cell fate determination factor protein, prevents cancer cell proliferation by repressing the function of estrogen receptors in breast cancer, the researchers found. However, they also found that as the presence of DACH1 decreases in breast cancer, the presence of estrogen receptors increases, and vice versa.

Approximately 70% of breast cancers are ER+. Treatment for ER+ breast cancer usually consists of hormone therapy, which includes lowering the natural estrogen levels in the body or using synthetic drugs like tamoxifen, which compete with natural estrogen. However, this treatment only works for a few years.

"Eventually, cancer cells will circumvent the estrogen-dependent growth and find a different pathway through which they will proliferate," said Vladimir Popov, a doctoral student in Biochemistry and Molecular Biology at Jefferson College of Graduate Studies of Thomas Jefferson University and the study's first author. "Our lab has shown that there is a correlation between DACH1 and estrogen receptors. DACH1 is a naturally occurring repressor of estrogen receptor function in normal breast tissue, which makes it a promising therapeutic target for patients with ER+ breast cancer."

DACH1 is expressed in normal breast tissue. As breast cancer develops and becomes more invasive, the expression of DACH1 decreases. In a previous study of more than 2,000 breast cancer patients, Jefferson researchers found that a lack of DACH1 expression was associated with a poor prognosis. Patients who did express DACH1 lived an average of 40 months longer.

"Many more studies need to be done, but there is strong evidence that DACH1 is a promising marker of survival and therapeutic target in patients with breast cancer," said the study's senior researcher Richard Pestell, M.D., Ph.D, who is director of the Kimmel Cancer Center and chair of the Cancer Biology department at Jefferson.

Source: Thomas Jefferson University (news : web)