

NUS scientists identify breast cancer biomarker

Rajesh Kumar

A scientific breakthrough by National University of Singapore (NUS) researchers could pave the way for personalized therapy for breast cancer.

Working with human cells in a lab, they have discovered that activation of WBP2 protein by phosphorylation could make normal breast cancer cells grow like cancer cells or turn mild breast cancer cells aggressive. [FASEB J 2011; 25:3004-3018]

Phosphorylation refers to the addition of a phosphate group to a protein or other organic molecule, which activates or deactivates many protein enzymes. Protein phosphorylation in particular plays a significant role in a wide range of cellular processes.

Breast cancer cells expressing the activated form of WBP2 turned the Wnt pathway, which promotes the growth of a number of cancer types including pancreas, lung, prostate and colon. They also appeared to be more sensitive to a drug that targets the Wnt pathway, said lead researcher Dr. Lim Yoon Pin.

Incidentally, Dr Lim's team was the first to observe the association of WBP2 with breast cancer development in 2007 and has since continued its research into the understanding of cancer biology.

The team's latest findings could lead to the development of a diagnostic kit for detecting the active WBP2 protein in breast cancer patients and the development of therapies that block the Wnt pathway in those patients to arrest cancer growth. A few drugs that block this pathway are already currently being trialed in humans.



Breakthrough could pave the way for personalized breast cancer therapy.

"WBP2 may be a biomarker that could predict which patients would respond to drugs that block the Wnt pathway," said Lim, while explaining the finding's application towards personalized therapy for breast cancer patients.

However, Dr. Lee Soo Chin, senior consultant hematology-oncology at the National University Cancer Institute, Singapore, said that before that can happen, additional studies are required to determine the best drugs that should be combined with the Wnt inhibitor to optimize its therapeutic efficacy.

The research team, backed by a finding from Exploit Technologies Pte Ltd (ETPL), the commercialization arm of Singapore's Agency for Science, Technology And Research (A*STAR), has filed an international patent application on the exploitation of WBP2 as a biomarker for a drug therapy.