

Stopping the spread of breast cancer

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The primary cause of death from breast cancer is the spread of tumor cells from the breast to other organs in the body. Northwestern Medicine® scientists have discovered a new pathway that can stop breast cancer cells from spreading.

Working with human [breast cancer](#) cells and mouse models of breast cancer, scientists identified a new protein that plays a key role in reprogramming [cancer cells](#) to migrate and invade other organs. When that protein is removed from cancer cells in mice, the ability of the cells to metastasize to the lung is dramatically decreased.

The protein, hnRNPM, helps launch a cascade of events that enables [breast cancer cells](#) to break away from the original tumor, penetrate the blood stream, invade another part of the body and form a new nodule of that tumor.

"Our research suggests that hnRNPM could be an effective target to stop cancer cells from spreading," said Northwestern Medicine scientist Chonghui Cheng, M.D. "So far there isn't a really good target that can cure breast cancer. The more we understand of [cancer metastasis](#) and the pathways that control it, the better we will be able to stop breast cancer from spreading."

Cheng is an assistant professor of medicine in hematology/oncology at Northwestern University Feinberg School of Medicine. She also is a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

The study was published June 1 in the journal *Genes & Development*.

Breast cancer is the second leading cause of cancer death in women worldwide. Each year, approximately 40,000 women die from breast cancer in the U.S.

Cheng and colleagues did experiments using human cells and identified hnRNPM's role in controlling the processes linked to tumor

metastasis. Then they removed the protein in a mouse model of breast cancer and discovered the cancer's ability to spread was significantly reduced.

Collaborating with Kalliopi Siziopikou, M.D., a professor in pathology and director of the breast pathology program at Feinberg, the scientists looked at breast cancer tumor specimens from patients and levels of hnRNPM in those samples. They found aggressive breast tumors, including those that show metastatic traits, expressed higher levels of hnRNPM. Siziopikou also is a member of the Lurie Cancer Center.

"This confirmed hnRNPM's role in the metastasis of human breast cancer," Cheng said. "Now we're investigating how the protein works in order to be able to develop a drug that could prevent tumor metastasis."

Provided by Northwestern University

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