

# Research findings could lead to life-saving treatments to fight tumor metastasis

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A team of researchers from the Cleveland Clinic and Case Western Reserve School of Medicine have identified critical complex mechanisms involved in the metastasis of deadly "triple negative" breast cancers (TNBC). These tumors are extremely difficult to treat, frequently return after remission, and are the most aggressive form of breast cancer in women. The discovery of this critical interaction of mechanisms could be used to develop new life saving treatments to kill metastatic tumors in TNBC.

"In previous findings published over the past 10 years, our teams have described key mechanisms in these critical proteins," said Khalid Sossey-Alaoui, PhD, Department of Molecular Cardiology, Lerner Research Institute, Cleveland Clinic. "A key component in the deadly metastatic potential of TNBC tumors is that they spread through tissues outside the breast very quickly. The two proteins that we studied, WAVE3 and TGF- $\beta$ , when together, promote tumor aggressiveness."

"We found important biological implications," said William Schiemann, PhD, an associate professor, Division of General Medical Sciences-Oncology, Case Western Reserve School of Medicine, and co-leader of the Breast Cancer Program at the Case Comprehensive Cancer Center. "For the first time, we uncovered an interplay between the two proteins that can inhibit or suppress TNBC – a discovery that has the potential to inhibit proliferations of the tumor."

The next step in the research process is to find a way to deliver inhibitors

to the tumor. Using nanoparticles, the Sossey-Alaoui, Schiemann team hope to deliver therapies directly to the site of the tumor and reverse the disease. Their goal is to move this basic research into clinical trials in the next three years.

"This finding helps to uncover the complex cascade of events that lead to metastasis, " said Stanton Gerson, MD, director of the Case Comprehensive Cancer Center and director of the Seidman Cancer Center at UH Case Medical Center. "These studies are part of a broad initiative in [breast cancer](#) research through numerous collaborative efforts at the Case Comprehensive Cancer Center. Using a team science approach is the most efficient and productive way to have an impact in cancer."

Metastasis is a complex, multi-stage process in which primary tumor cells invade the surrounding cells, tissues and organs, integrate into blood vessels, and survive and move throughout the body. Metastasis of primary mammary tumors accounts for the vast majority of deaths of [breast cancer patients](#). The five-year survival rate for patients with breast cancer drops precipitously from 98% for individuals with localized disease to 23% for those with metastatic disease.

**More information:** This study appeared in the print addition of *Breast Cancer Research and Treatment* on November 7, 2013.

Provided by Case Western Reserve University

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