New biomarkers may influence drug design and alternative treatments of cancer, study shows

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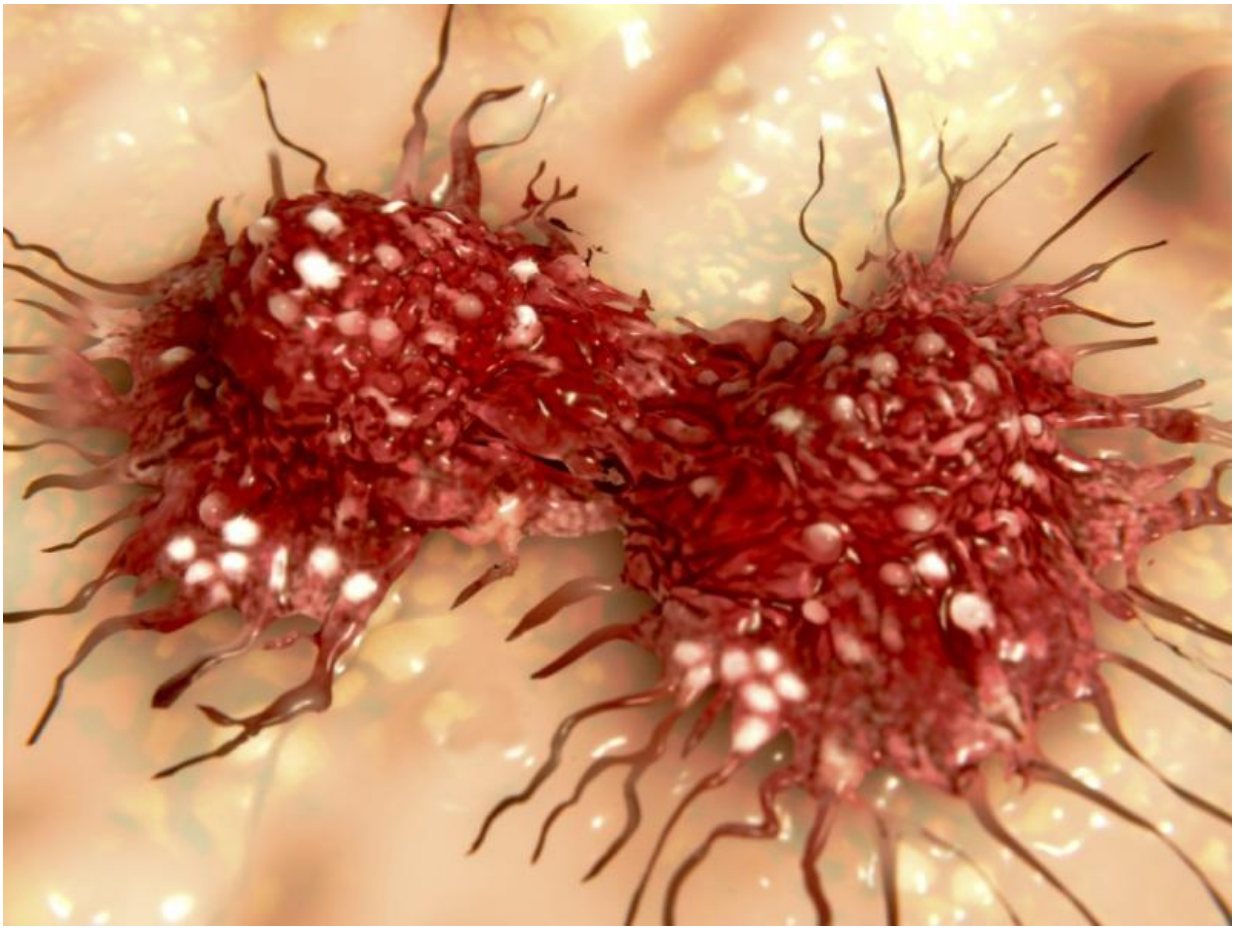

Researchers have discovered gene-targets (biomarkers) that may enable alternative treatments or the potential design of new drugs that target metastasis-promoting tumor genes.

This is the key finding in a study led by researchers from Georgia State University in collaboration with the University of Oklahoma College of Medicine and published in journal *Oncotarget*.

The spread of cancer cells from the initial site of occurrence (primary site) to other secondary tissues is called metastasis, and contributes to poor or limited response of cancer cells to treatments, which results in death. For example, cancer cells initially in the lungs can begin to spread to other organs, including the brain and liver.

Gynecologic cancer typically originates from the female reproductive organs, and include endometrial and ovarian cancer, among others. Survival rates are typically very poor for these cancer-types, with limited response to existing therapies. A major reason for poor survival rates is late diagnoses, by which time the cancer cells have spread to secondary sites.

"The aim of our study was to investigate/search for gene targets that provide meaningful information on the tendency of cancer cells to spread to secondary sites," said Imoh Okon, assistant professor of research in the Center for Molecular and Translational Medicine at Georgia State and lead author on the study. "In this study, we found that enhanced neuropilin-1 (NRP-1) and NEDD9 levels in endometrial and lung cancer positively correlated with metastasis, while liver kinase B1 (LKB1) inhibited the migration of cancer cells."

For the study, researchers obtained more than a hundred clinical endometrial cancer specimens and matching serum. Using multiplex arrays and a variety of experimental approaches, they analyzed the

specimens for gene targets that positively or negatively correlated with metastatic potential of the tumors. Data were translated to reflect the patient's age at diagnosis, disease stage, grade and histology.

"Our research provides strong translational potential with respect to biomarkers that play critical roles in the development of endometrial/lung tumors," added Okon. "The ability to identify, characterize and validate gene targets that strongly associate or correlate with disease development or metastasis will facilitate early detection and appropriate treatments to tackle the disease at an early stage or before metastasis occurs."

The researchers' next steps will involve expansion of the biomarkers identified in this study to other cancer types, especially breast cancer, due to the hormonal input that is a common factor in gynecologic tumors.

Confirmation of the biomarkers in other cancer types will facilitate further characterization and validation to provide mechanistic understanding of how and why these specific gene-targets become modulated to accentuate or inhibit tumor metastasis. The overall goal will be to test potential biomarker function or development of new drugs that target the identified genes.

More information: Aberrant NRP-1 expression serves as predicator of metastatic endometrial and lung cancers. DOI: 10.18632/oncotarget.6699

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