A novel protein, named C43 by its discoverer, is intimately involved in tumor cell invasion, migration and epithelial mesenchymal transition (EMT), a key process involved in the development of metastasis in breast cancer and other aggressive carcinomas. C43 shows promise for the development of better therapeutic modalities and diagnostics for breast cancer and other carcinomas.

Background:
Metastasis from breast cancer remains a major stumbling block in treatment. Micrometastases can occur early in breast cancer development, which accounts for treatment failures following aggressive treatment of primary tumors. Identification and characterization of the proteins responsible for the metastatic process will aid in the development of better therapeutic modalities and diagnostics for breast cancer and other aggressive carcinomas.

Technology Description:
Dr. Jian Cao, MD, assistant professor of Medicine and Pathology, School of Medicine at Stony Brook University, has discovered a novel protein, named C43, which is intimately involved in tumor cell invasion, migration and epithelial mesenchymal transition (EMT), a key process involved in the development of metastasis. C43 expression is up regulated in a variety of human carcinomas, including breast cancer, and expression correlates with cancer grade, stage and recurrence. Inhibition of the C43 expression in tumors slows the growth of breast cancer in a mouse xenograft model and increases survival time. In vitro experiments show that cancer cell invasion and migration correlate well with the level of C43 expression. C43 also appears to be involved in the maintenance of the mesenchymal phenotype and may represent a novel target for controlling this process. C43 represents a novel target for drug discovery and diagnostic development.

Advantages
- C43 appears to be required for maintaining the mesenchymal phenotype.
- C43 has a critical function in cancer cell invasion and metastasis.
- Expression of C43 correlates with cancer grade, stage and recurrence.
- Expressed at low levels in non-malignant cells.
- Functionally and genetically validated novel target.

Applications
- Novel therapeutic target for breast cancer and other carcinomas
- Novel diagnostic marker for cancer staging and prognosis

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