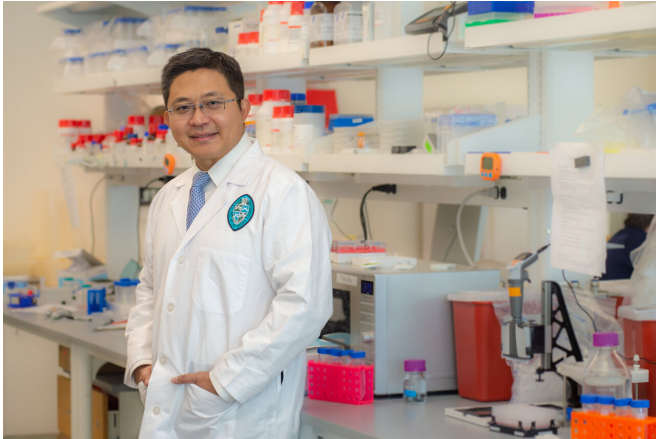# Researchers identify marker that may predict whether lung cancer likely to spread

11 March 2020

Tony Hu is the Weatherhead Presidential Chair in Biotechnology Innovation at Tulane University School of Medicine. Credit: Paula Burch-Celentano

Non-small cell lung cancer (NSCLC) is the most commonly diagnosed cancer, and the leading cause of cancer death worldwide. More than half of NSCLC patients die after developing metastases. There are no tests currently that would allow doctors to identify patients where more aggressive therapy could reduce mortality. Researchers at Tulane University have identified a protein on tumor-derived extracellular vesicles that indicates if a NSCLC tumor is likely to metastasize, according to a new study in *Science Advances*.

The protein could be used as a biomarker to develop a rapid, minimally invasive test to catch these cancers early when they are more treatable, said study author Tony Hu, Weatherhead Presidential Chair in Biotechnology Innovation at Tulane University School of Medicine.

"The goal of any cancer diagnosis and treatment is to catch it early," says Hu. "This information could help diagnose patients who are at high risk for having their cancer metastasize, and treatment

could be tailored to account for that. Not all patients have the same type of tumor, and if you can target therapy to address a particular tumor, you can improve outcomes."

Most patients with NCSLC aren't diagnosed until their primary tumor has metastasized to other parts of the body. However, patients even patients diagnosed with non-metastatic NSCLC tumors of the same stage can often have very different treatment outcomes. A marker that could identify which patients are likely to develop metastatic NSCLC, would aid in selecting those patients who should receive different treatment approaches to reduce their risk of metastasis and improve odds for long-term survival. However, no biomarkers identified to date have adequate sensitivity, specificity, or reproducibility for this purpose and most require tumor samples that require invasive procedures that are not suitable for repeated analyses.

All cells shed extracellular vesicles, small membrane particles that carry proteins, RNA and other molecules. These vesicles can bind to and transfer their contents to specific cell types to change the behavior of these cells. Extracellular vesicles shed by cancer cells can alter the environment of both adjacent and distant cells to establish metastatic niches that promote the invasion and growth of circulating tumor cells. Study researchers evaluated proteins carried by extracellular vesicles shed by NSCLC cells to determine which might serve as markers for metastatic NSCLC cells. Hu and his team identified a protein that was highly expressed on extracellular vesicles of metastatic but not nonmetastatic NSCLC cells. This could predict which NSCLC patients were at increased risk for metastasis when its expression was analyzed on extracellular vesicles isolated from their blood.

The next goal of Hu's team is to incorporate the biomarker profiling with their well-developed

nanoplasmonic detection assay for a rapid clinical translation.

More information: "Extracellular vesicle tetraspanin-8 level predicts distant metastasis in non–small cell lung cancer after concurrent chemoradiation" *Science Advances* (2020). advances.sciencemag.org/content/6/11/eaaz6162

Provided by Tulane University

APA citation: Researchers identify marker that may predict whether lung cancer likely to spread (2020, March 11) retrieved 21 September 2022 from https://medicalxpress.com/news/2020-03-marker-lung-cancer.html