



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP180505

Project Title:  
Circulating Exosomes as Biomarkers for Lung Cancer Early Detection

Award Mechanism:  
Individual Investigator Research Awards for Prevention and Early  
Detection

Principal Investigator:  
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Entity:  
The University of Texas M.D. Anderson Cancer Center

### Lay Summary:

Lung cancer is the leading cause of cancer death among men, and the second leading cause among women worldwide. Lung cancer screening with low-dose computed tomography (LDCT) has been shown to reduce mortality by 20%, although there are concerns including high false positivity, cost, and radiation exposure. Of note, the false positive rate of lung cancer screening with LDCT alone was 96.4%. Blood-based biomarkers are a promising and attractive approach to complement LDCT. We identified and have undertaken initial validation studies of a set of circulating lung cancer biomarkers, while we have recently developed high-yield and high-purity methods for isolation of circulating exosomes, which have recently emerged as additional promising biomarkers for lung cancer. The focus of this proposal is on (1) to identify potential exosome biomarkers using prediagnostic plasma samples collected from subjects that were later diagnosed with lung cancer; (2) to assess and compare the performance of exosome biomarkers with that of other validated biomarkers side by side in an independent pre-diagnostic plasma sample set to develop an optimal biomarker panel; (3) to validate the assembled biomarker panel in plasma samples collected in a lung cancer screening setting.

The proposed study, if successful, will provide a simple, non-invasive, and cost-effective diagnostic biomarker panel, allowing us to achieve a better screening accuracy, to diagnose lung cancer earlier, and to provide less invasive and cost effective therapeutic options. As the biomarker panel will be tested in the context of our intended clinical application, the panel will be translated immediately into a powerful diagnostic tool for the management of high-risk participants, and consequently will reduce mortality associated with lung cancer through more effective screening strategies.