



## CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:  
RP160517

Project Title:  
Exosomal DNA as a surrogate biomarker for early diagnosis and  
therapeutic stratification in pancreatic cancer

Award Mechanism:  
Individual Investigator

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

### Lay Summary:

Pancreatic cancer has one of the lowest 5-year survival rates amongst solid tumors. Early detection of pancreatic cancer at a surgically resectable stage has a profound impact on prognosis. However current blood-based tests for pancreatic cancer lack the sensitivity or specificity for identifying individuals who are most at risk for harboring this malignancy. Cancer cells release tiny messengers called "exosomes" into the blood circulation, and do so in significantly more voluminous quantities than normal tissues. Exosomes contain considerable genetic information representative of the tumor cells from which they are released, including the DNA abnormalities (mutations) that are present in the cancer. Thus, DNA contained within exosomes isolated from the blood can serve as a reliable surrogate of the patient's tumor DNA, enabling a new way of interrogating cancers with a so-called "liquid biopsy". In a liquid biopsy, the entirety, or selected elements, of the tumor genome can be isolated from the blood itself, providing both diagnostic and therapy-related information, and precluding the need for an expensive and invasive tissue biopsy. We postulate that testing for mutations in DNA contained within exosomes will become a rapid and cost-effective blood test for the early detection of pancreatic cancer. We also postulate that the exosomal DNA will circumvent the need for tissue biopsies in the overwhelming majority of pancreatic cancer patients, especially in individuals with metastatic disease, in whom adequate tissue specimens for more sophisticated molecular assays are rarely obtained. We will leverage the exceptional clinical biospecimen resources at MD Anderson Cancer Center to isolate exosomes from blood samples of large numbers of patients with both advanced and early stage pancreatic cancer. Our long-term goal is for cancer-specific exosomes in blood to be the sample of choice for both early diagnosis and personalized therapy of pancreatic cancer.