eX Marks the Spot: A Novel Method in Diagnosing PCa via Exosome Analysis

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Prostate Cancer (PCa) is the most commonly diagnosed malignancy in North American men. PCa displays a broad range of clinical behavior from relatively benign to an aggressive metastatic disease. Hence research is geared towards determining which diseases are going to be benign and which ones will be progress to become metastatic disease. Unfortunately, current day diagnoses lack the ability to determine the aggressive potentials of cancer in the early stages making it difficult to adequately treat patients. Thus, the objective of the project is to design a novel method in detecting prostate cancer. Half a century ago, scientists discovered a form of extracellular vesicle known as exosomes. When first discovered, it was believed that exosomes were sacks of cellular waste secreted by most cell lines, however present day research suggest that exosomes are used by cells to communicate with one another, and further contain protein, RNA, and DNA from its origin. “eX Marks the Spot” is a project that suggests that the key to an early and specific detection of metastatic cancer lies within exosomes. This project aim’s in using protein derived from exosomes to identify patients that are diagnosed with different stages of prostate cancer. Results from this project suggest that protein derived from exosomes can be used as prognostic markers, for example AZGP1 a biomarker for less aggressive PCa was overexpressed in exosomes samples derived from indolent PCa cell lines, and further was not expressed in exosomes derived from aggressive PCa cell lines. These findings indicated that biomarkers are readily expressed in exosomes which ultimately can be used to stratify patients in a clinical environment.