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Identification of DNA methylation biomarkers predicting prostate cancer aggressiveness

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Prostate cancer (PCa) is the most commonly diagnosed cancer and second leading cause for men in the United States. The majority of prostate cancer (PCa) detected in the era of routine prostate-specific antigen (PSA) screening are indolent and pose little or no threat to the health or longevity of the patients. However, about 90% of men with localized PCa receive aggressive treatment that often causes significant morbidity. This clinical dilemma is largely attributed to the fact that clinical variables, such as Gleason Score (GS), PSA level, and tumor stage, cannot accurately predict aggressive from indolent diseases at diagnosis. It is imperative to find biomarkers that can augment clinical variables and improve risk stratification of PCa patients. The clinical utility of tissue-based biomarkers is limited by the invasive procedure, false negative biopsy, and tumor heterogeneity. Blood is easily accessible and measures systemic effect. In this seminar, I will focus on blood-based biomarkers: Global DNA methylation and specific locus methylation. I will discuss methylation biomarkers that we have found, how to apply estimate the specificity and sensitivity of newly found biomarkers and establish multivariate nomograms that include epidemiological factors, clinical variables, and biomarkers.

Biography

Yuyan Han, a NCI-R25T funded postdoctoral fellow from UT MD Anderson Cancer Center. She received her Ph.D degree from Texas A&M University. Her research shed a light on the role of circadian rhythms and related microRNAs on the biliary malignancy transformation. During her postdoc training, Dr. Han has been focusing on searching for molecular biomarkers that show differentially methylated in Prostate Cancer Patients with different aggressiveness via multiple methods. The finding of new biomarkers will enable early diagnosis of more-aggressiveness patients while avoiding overtreatment of less-aggressiveness patients. In future, some biomarkers might become potential candidates for early screening of large population. Dr. Han's research will provide great clinical significance to oncology field.

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