AMCAR combined with PSA as prognosis biomarker to improve the prediction of prostate cancer progression

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Serum samples offer unique opportunities for early diagnosis of clinical conditions. Previously reports indicated the combination of serum biomarkers improve the precision detection of cancer progression, include prostate cancer. Currently, standard detection of serum proteins purely based on the technology of antigen and antibody interaction. Therefore, the precision of serum markers was determined by the quality of antibodies. Here, we show that detection of enzyme activities of AMCAR, the original biological function of serum biomarkers, provides a better accuracy and precision of diagnosis and prognosis prediction. Prostate cancer patient serum was used to compare the accuracy of PSA with or without enzyme activities as the biomarker. Electrochemical platform prototype was used for the AMCAR testing. AMCAR electrochemical enzyme system showed higher of specificity when compared to clinical PSA data. The specificity of AMCAR is 53% in average. The specificity of PSA is 40% in average. In addition, accuracy of AMCAR is higher than PSA alone, in which they are 52.7% and 51% of accuracy, respectively. In addition, the combination of PSA and AMCAR showed more than 70% in accuracy. When we combine PSA, fPSA/PSA and AMCAR, the accuracy reached to the 76% in average, suggested the important to use the combination testing for future platform development. The results indicated with the combination of enzyme activities we could increase the accuracy to detect prostate cancer when compared PSA only. In conclusion, our results highlight the medically relevant potential of determining enzyme activities in cancer patient serum and possibly other body fluids. Thus, proteins biological function rather serum concentration is a new class of liquid biopsy that promise to serve as useful clinical biomarkers.

Speaker Biography

Shian Ying Sung has completed his PhD from Virginia Commonwealth University, USA in 2000. He then went to Emory University as young investigator and instructors. He is the director of Joint Clinical Research Center and associate professor of The PhD Program for Translational Medicine, Taipei Medical University, Taipei, Taiwan. His lab has expertise and extensive experience in 3D modeling of tumor and microenvironment interaction. His publications are in outstanding journals and has been working on prostate cancer tumor microenvironment for over 18 years. Currently, there are 3 to 4 international collaborations ongoing, includes Kobe University, Cedars Sinai Medical Center, Case Western Reserve University and University of Malaya. He is currently the chair of Regional Asia Clinical Trial Association (REACTA) and hosting the REACTA annual Meeting in Taipei.

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