Extended Abstract Journal of Clinical and Bioanalytical Chemistry 2018
Vol.2 No.2

Analytica-2015: From biomarker discovery to patient care - Zsuzsanna Kuklenyik - Centers for Disease Control and Prevention

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In recent decades, metabolism research was greatly accelerated by genetic engineering. Thanks to little "knock out" mice and transgenic mice we gained insight into numerous correlations between human genes and the physiological role of new potential biomarkers of human diseases. It is the role of creative analytical chemists to develop multiplexed high throughput analytical methods that detect and precisely quantify these new biomarkers in large number of biological samples. These high throughput methods are used in epidemiological studies that evaluate the relative efficacy of newly emerging biomarkers in predicting individual patent risk. If a biomarker is found effective, it can be considered a risk factor. At this point analytical chemists are presented with the new challenge of developing cost effective diagnostic methods measuring these risk factors in clinical laboratories and in point-of-care settings. Analytical chemists also need to develop gold standard reference methods for characterization of reference materials and organization of harmonization programs, to ensure the performance verification of clinical laboratories and commercial test kits or devices in routine patient care. Analytical chemist welcomes these challenges of being translators between basic metabolic research and patient care, and enjoys the opportunities where we can apply our broad range of skills and scientific creativity.

Finding clinically applicable biomarkers that will permit researchers and clinicians to consolidate hereditary, and clinical data will upgrade our capacity to precisely decide the beginning and pathogenic course of malignant growth and asses the harmfulness and adequacy of clinical mediations. Subsequently, guaranteeing the nature of biospecimens and gathering a huge arrangement of control examples are significant strides in biomarker revelation. Prilutskaya' bunch in this issue clarified the significance of the acquisition procedure and techniques to keep up the trust worthiness of biospecimens for biomarker revelation. Biomarkers can be related with a particular sickness or tumor stage. For instance, Perrier's gathering depicted movement animating variable as a biomarker to recognize the movement of bosom disease. Moreover, Mann and Tanaka depicted how E-determination can be utilized as a biomarker related to tumor stromal parts. These biomarkers are right now experiencing thorough approval. For all biomarker ventures, highquality biospecimens must be utilized for approval, and the information ought to be interviewed by other free examination gatherings. This cross validation step is crucial in light of the fact that numerous potential biomarkers don't display adequacy when inspected utilizing enormous and heterogeneous patient associates in the facility. A tale innovation in the field of biomarker disclosure is the utilization of aptamers to supplant antibodies in symptomatic applications.

Biomarker-helped finding, forecast, and focused on treatment advancement involve the fundamental establishment of customized medication. We presently face a remarkable eventual fate of malignant growth care that will be founded to a great extent on the sub-atomic profiles of people. Clinical result based examination will offer ascent to a particular arrangement of biomarkers in a multiplex organization that can be utilized to build up another class of medications and improve clinical practice.

Biography

Zsuzsanna Kuklenyik has completed her Master's degree in Chemical Engineering at Technical University of Budapest, and her PhD degree at Emory University of Atlanta Georgia, where she also conducted Post-doctoral studies. Currently she is a senior research scientist in the Biological Mass Spectrometry Laboratory at the Centers for Disease Control and Prevention in Atlanta. She has published more than 40 papers in reputed journals on wide range of applications of hyphenated chromatographic techniques and mass spectrometry, such as biomonitoring of environmental chemicals, analysis of pre-exposure prophylactic drugs against HIV, biological toxins, and more recently, lipoproteins.

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This work is partly presented 6th International Conference and Exhibition on Analytical & Bioanalytical Techniques September 01-03, 2015 Valencia, Spain