Metabolomics-2013
OMICS Group Conferences
Accelerating Scientific Discovery
2nd International Conference and Exhibition on
Metabolomics & Systems Biology
April 8-10, 2013 Hilton Chicago/Northbrook, USA

Metabolome wide association studies (MWAS) in cancer epidemiology

Mukesh Verma

National Institutes of Health, USA

Abstract

Metabolomics is the study of low molecular weight molecules or metabolites produced within cells and biological systems. It involves technologies, such as mass spectrometry (MS) and nuclear magnetic resonance spectrography (NMR), which can measure hundreds to thousands of unique chemical entities (UCE). The metabolome provides one of the most accurate reflections of cellular activity at the functional level and hence can be leveraged for discerning mechanistic information during different normal and disease states. In clinical samples, metabolites are more stable than proteins or RNA. In fact, metabolomic profiling in basic, epidemiological, clinical and translational studies has revealed potential new biomarkers of disease and therapeutic outcome and led to novel mechanistic understanding of pathogenesis. These include the recent biomarkers for diabetes risk, novel metabolites associated with cancer, and the discovery of over 500 unique lipids in plasma. However, unlike genomics or even proteomics, the degree of metabolite complexity and heterogeneity within biological systems presents unique challenges requiring specialized skills and resources to overcome. An example of association of metabolomics predictors of body fat amount and distribution and associated risk with cancer will be discussed. Epidemiology studies with altered metabolite profiles in lung, prostate, and endometrial cancer will also be discussed.

Biography

Mukesh Verma is a Program Director and Chief in the Methods and Technologies Branch (MTB), Epidemiology and Genetics Research Program (EGRP) of the Division of Cancer Control and Population Sciences (DCCPS) at the National Cancer Institute (NCI), National Institutes of Health (NIH). Before coming to the DCCPS, he was a Program Director in the Division of Cancer Prevention (DCP), NCI, providing direction in the areas of biomarkers, early detection, risk assessment and prevention of cancer, and cancers associated with infectious agents. Mukesh Verma holds a M.Sc. from Pantnagar University and a Ph.D. from Banaras Hindu University. He did postdoctoral research at George Washington University and was a faculty member at Georgetown University. He has published 126 research articles and reviews and edited three books in cancer epigenetics and epidemiology field.