

THSTI FACULTY FRIDAY SEMINARS

Target to Therapeutics using High Throughput Quantitative proteomics



Speaker:

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Venue: Seminar Room 1

Date: 9th August 2019

Time: 4pm – 5pm

About the talk:

Mass spectrometry-based targeted proteomics has found its valuable applications in the field of life sciences and medical biology. Targeted and quantitative proteomics are able to find the cause of disease and biomarker especially narrowing down to particular protein / gene and it is coming closer to transcriptomics and genomics. Targeted proteomics has potential to replace antibody and other validation techniques but its success will depend upon low cost, low maintenance, accuracy, reproducibility and robustness of the mass spectrometry instrument. Application of mass spectrometry in health and disease especially targeting drug development using targeted and quantitative proteomics will be discussed. The quantitation of proteins using stable isotope labeling with amino acids in cell culture (SILAC) would be discussed in details specially to find the target in disease. Notably, it also plays an important role to understand the complex process of specific signaling mechanism and its network. Isobaric tags for relative and absolute quantitation (iTRAQ) has been applied to find targeted biomarkers of infectious disease, pregnancy-related conditions and metabolic disorder-diabetes and its complications. Targeted quantitative proteomics is very helpful to understand and validate the biomarker and mode of action of different known and unknown drug and understanding the host pathogen interaction. Our group is working to develop novel anticancer drug against different specific cancers. We have investigated successfully the efficiency of various novel natural and synthetic metabolites on targeted oncogene and cancer suppressor genes of different human cancers like retinoblastoma, leukaemia, and melanoma using cell culture and mouse model with the help of quantitative proteomics. Mode of action and targeted signaling mechanism of these novel drugs has been revealed by using quantitative proteomics.

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