Editorial

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Editorial Note on Proteomics and its Applications

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Proteomics involves the applications of technologies for the identification and quantification of overall proteins present content of a tissue, cell, or an organism. It supplements the other "omics" technologies such as transcriptomics and genomics to expound the identity of proteins of an organism and to cognize the structure and functions of a particular protein. Proteomics-based technologies are used in various capacities for different research settings such as detection of various diagnostic markers, understanding pathogenicity mechanisms, candidates for vaccine production, alteration of expression patterns in response to different signals and interpretation of functional protein pathways in different diseases.

The dynamic role of molecules to support the life is documented since the initial stages of biological research. Proteomics are one of the most significant methodologies for the gene function although; it is much more complex compared with genomic. Fluctuations in gene expression level can be determined by the analysis of transcriptome or proteome to discriminate between two biological states of the cell.

Proteomics is used to investigate when and where proteins are expressed, rates of protein production, degradation, and steady-state abundance, how proteins are modified (for example, post-translational modifications (PTMs) such as phosphorylation), the movement of proteins between subcellular compartments, the involvement of proteins in metabolic pathways and how proteins interact with one another.

Personalized medicine is for tailoring disease treatment to each patient based on their genetic and epigenetic makeup, so as to improve efficacy and reduce adverse effects. While genomics and transcriptomics have been the main focus of such studies to date, proteomics data will likely add a further dimension for patient-specific management.

For identification of protein markers such as the diagnosis and prognosis of glioblastoma, and evaluating patients' response to therapeutic interventions such as stem cell transplantation.

Proteomics are used for system-wide investigations of disease pathways and host–pathogen interactions to identify potential biomarkers and therapeutic targets and system-wide investigations of drug action, resistance, toxicity, and efficacy.

For drug discovery and development and for identifying potential drug targets, examining the drug ability of selected protein targets, and developing drugs aimed at candidate therapeutic protein targets. Proteomics are used in food science for food safety and quality control, allergen detection and improving the nutritional value of foods. Along with the expected advances in proteomic techniques approaches to proteomic data analysis are expected to evolve.