**Program Midterm on discipline Proteomic technologies**

The proteome term is applied to several different types of biological systems. A *cellular proteome* is the collection of proteins found in a particular cell type under a particular set of environmental conditions such as exposure to hormone stimulation. It can also be useful to consider an organism's *complete proteome,* which can be conceptualized as the complete set of proteins from all of the various cellular proteomes. This is very roughly the protein equivalent of the genome. The term "proteome" has also been used to refer to the collection of proteins in certain sub-cellular biological systems. For example, all of the proteins in a virus can be called a viral proteome.

Module 1 **High-throughput proteomic technologies. Current research methodologies**

Main approaches and methods of proteomic technologies

Different types of proteome

Methods of proteins preparation

Different types of mass spectrometry

Analysis and Characterization of Proteins.

Western Blotting Electrophoretic Separation of Proteins,

Transfer Proteins to a Membrane

In proteomics, there are multiple methods to study proteins. Generally, proteins can either be detected using ***antibodies (immunoassays***) or using ***mass spectrometry***. If a complex biological sample is analyzed, either a very specific antibody needs to be used in ***quantitative dot blot analysis (qdb)***, or then biochemical separation needs to be used before the detection step as there are too many analytes in the sample to perform accurate detection and quantification.

Protein mass spectrometry

Sample Preparation for mass spectrometry

Analysis of subproteomes based on specific posttranslational modifications including the phosphoproteome, the glycoproteome, and nitrated proteins

Alternative splicing

Applications of matrix-assisted laser desorption/ionization (MALDI)

. Protein identification by in-gel digestion and mass spectrometry

Tandem mass spectrometry

Two-dimensional gel electrophoresis (2D gels) o

Peptide mass fingerprinting

Cis- and trans-acting regulatory elements that control alternative splicing

Tandem mass spectrometry

Protein identification

Quantitative mass spectrometry