

Proteomics Course

LECTURE-1 Introduction to Proteomics Course



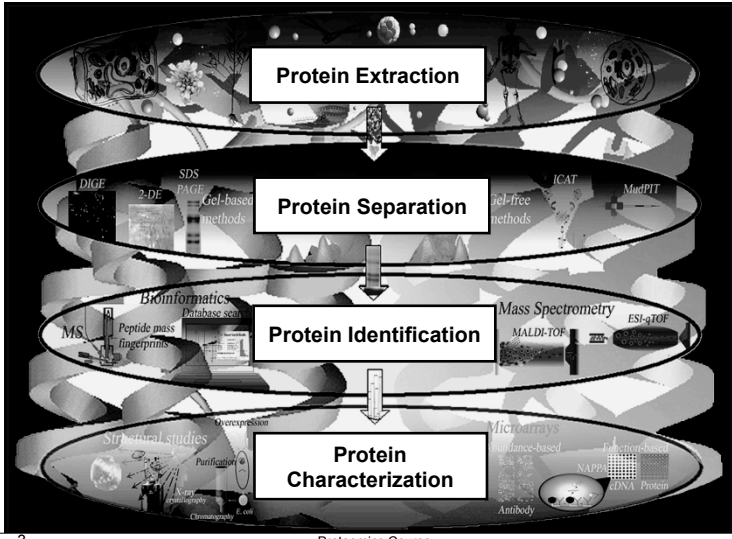
Dr. Sanjeeva Srivastava
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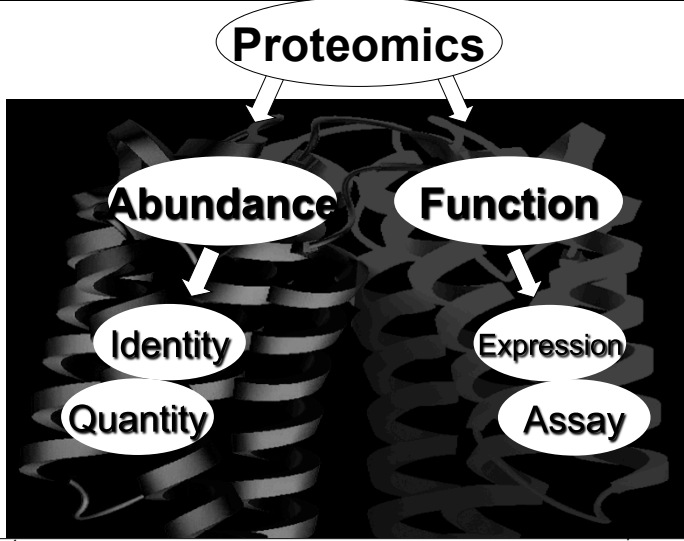
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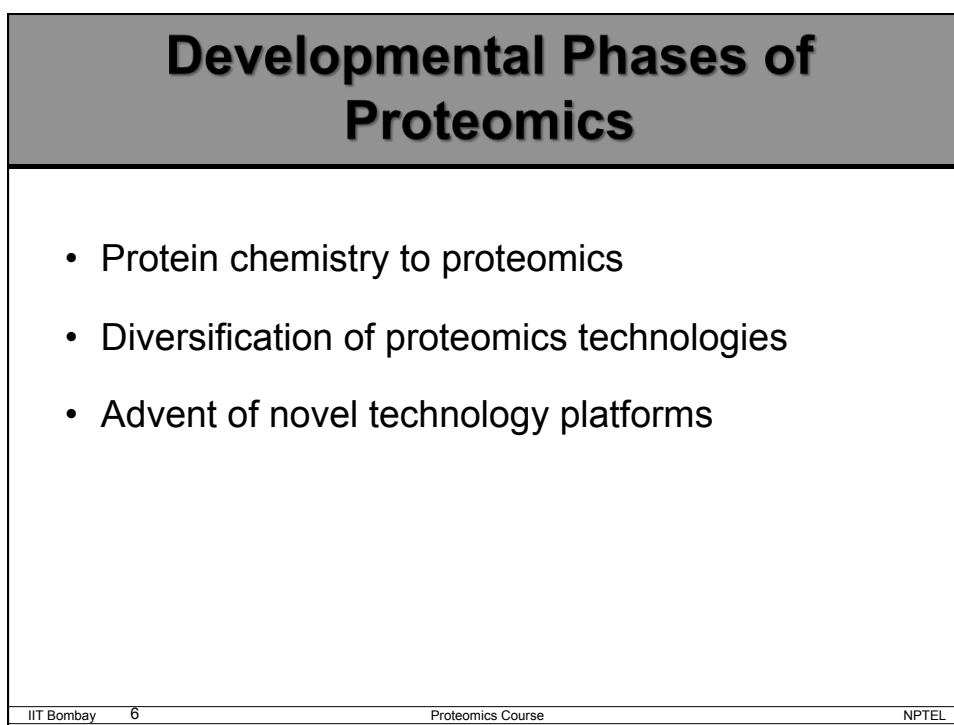
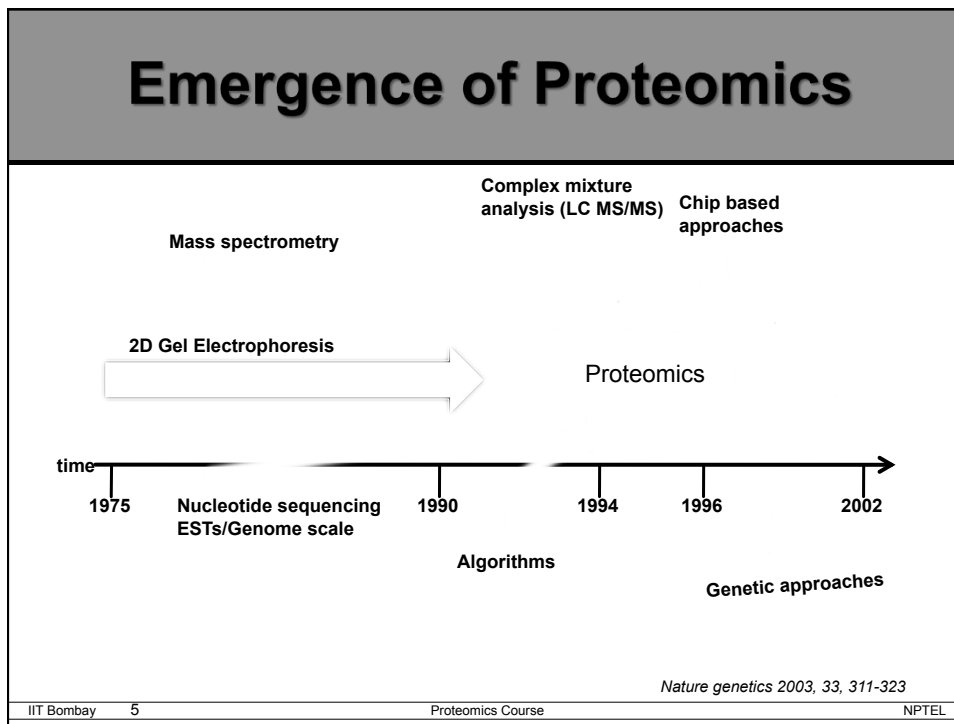


Steps involved in proteome analysis



Abundance- and function-based proteomics





Genomics to Proteomics

Genomics to Proteomics

- Gene expression regulated by post-transcriptional and post-translational modifications
- Compared to genome of an organism proteome presents further complexity

Central Dogma, Omics and Systems Biology

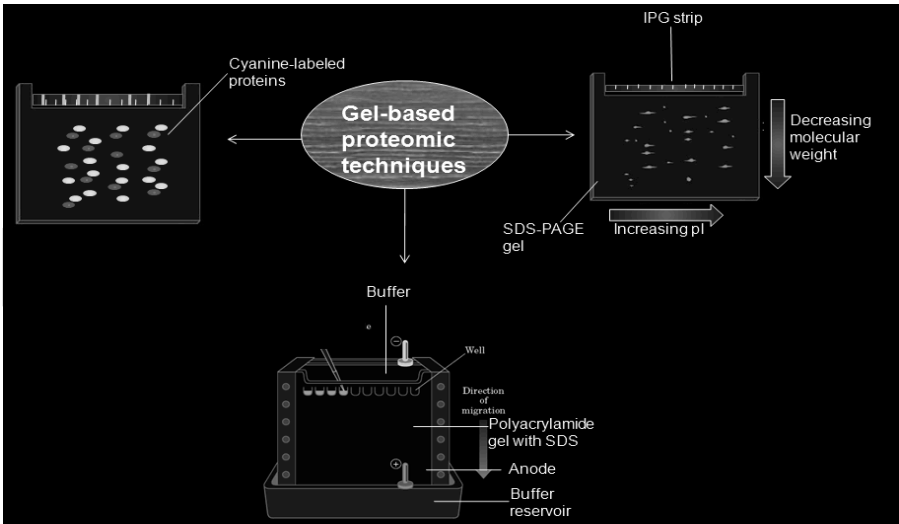
Central Dogma, Omics and Systems Biology

- Orderly and unidirectional flow of information encoded in base sequences of cells, DNA to RNA and protein
- Understanding biological system is a challenging task
 - Omics approaches are promising

Gel-based Proteomic techniques

Gel-based Proteomic Techniques

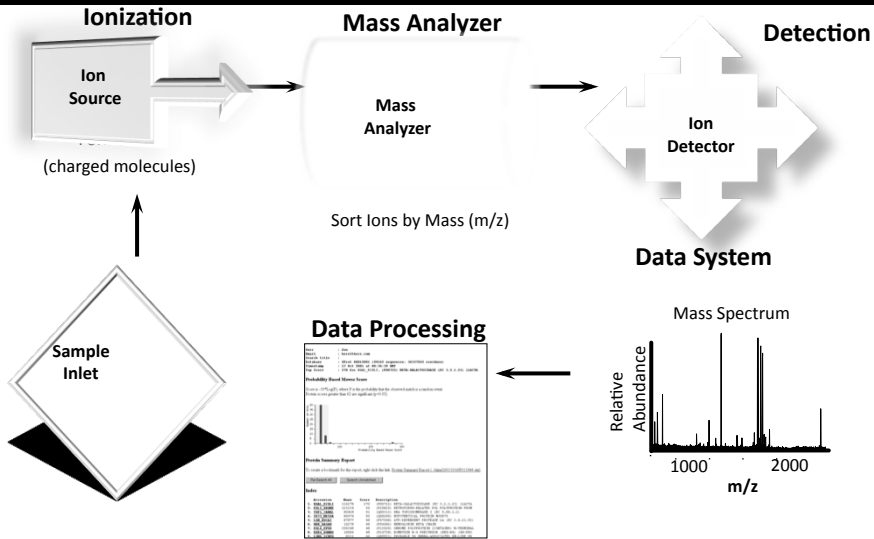
IPG strip



Mass Spectrometry

Dass et al. DOI: 10.1002/9780470118498.ch3

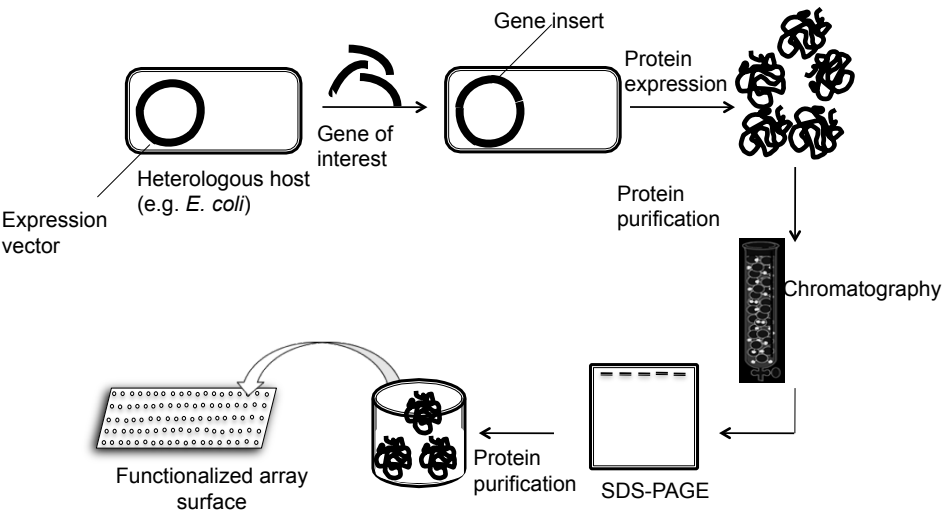
Mass Spectrometry



Interactomics

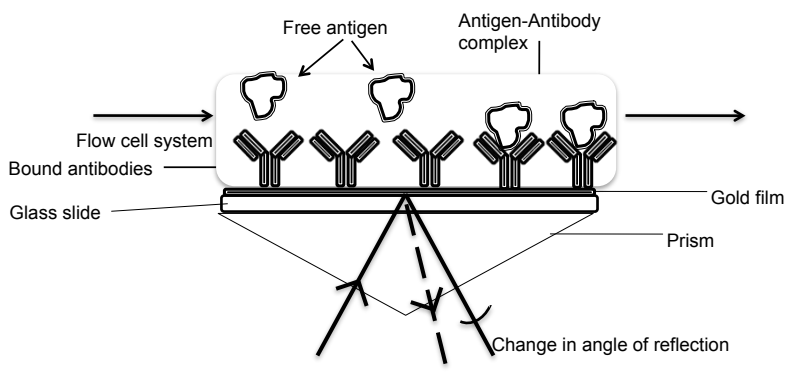
Ramachandran et al. 2005. FEBS J; Chandra et al. 2010. Proteomics

Interactomics



Label-free Detection Techniques

Label-free Detection Techniques



Summary

- Unraveling structural and functional details of proteins at the proteome level is a daunting task
- Proteomics has quickly evolved to become an integral aspect of human biology and medicine
- Proteomics has advanced rapidly; however, many experimental and computational challenges still exist

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