

# Unit 9 - Week-8: Advancement in Proteomics

## Course outline

How to access the portal ?

Week-1: Basics of proteins and proteomics

Week-2: Gel-based proteomics

Week-3: Two-dimensional gel electrophoresis (2-DE)

Week-4: Difference in gel electrophoresis (DIGE) & Systems Biology

Week-5: Basics of mass spectrometry

Week-6: Basics of mass spectrometry and sample preparation

Week-7: Quantitative Proteomics

Week-8: Advancement in Proteomics

L36. Proteomics applications

L37. Challenges in proteomics

L38. OMICS and translational research

L39. Lab session – Targeted proteomics using triple quadrupole mass spectrometry

L40. Lab session – Targeted proteomics: multiple reaction monitoring

Download Videos

Weekly Feedback

Quiz : Week-8 Assignment

Text Transcripts

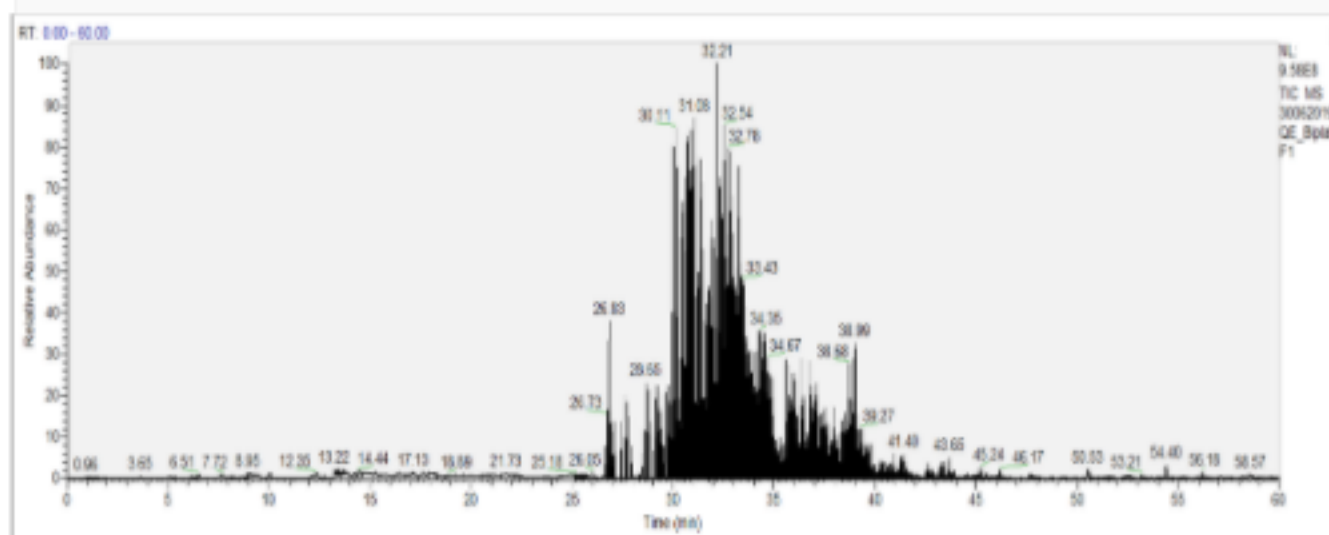
## Week-8 Assignment

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

**Due on 2019-10-23, 23:59 IST.**

Week-8 Assignment

1) Instructions for Q.1 and Q.2. After analyzing a sample on Orbitrap mass spectrometer the following chromatogram was obtained. Answer the following questions (Q.1 and Q.2) on the basis of given figure. **1 point**



What gradient is used to obtain the above chromatogram?

- 30 minutes
- 60 minutes
- 90 minutes
- 25 minutes

No, the answer is incorrect.

Score: 0

Accepted Answers: 60 minutes

2) According to you maximum elution has happened during which time? **1 point**

- 0 to 35 minutes
- 15 to 60 minutes
- 35 to 50 minutes
- 25 to 45 minutes

No, the answer is incorrect.

Score: 0

Accepted Answers: 25 to 45 minutes

3) What do you understand by transition in Multiple Reaction Monitoring? **1 point**

- Precursor ion fragmentation to produce daughter ions
- Electrospray ionized molecules
- All the ions detected in mass spec
- All the precursor ions

No, the answer is incorrect.

Score: 0

Accepted Answers: Precursor ion fragmentation to produce daughter ions

4) How many minimum transitions are recommended for validation of any peptide? **1 point**

- 1
- 2
- 3
- 4

No, the answer is incorrect.

Score: 0

Accepted Answers: 3

5) The process of interpreting biological information to set of genes or proteins is called? **1 point**

- Statistical analysis
- Cluster analysis
- Functional annotation
- Network analysis

No, the answer is incorrect.

Score: 0

Accepted Answers: Functional annotation

6) The chromatin landscape of tumors is often marked by abnormal PTM patterns, aberrant assembly and recruitment of protein complexes to specific genomic loci. Which of the following applications of proteomics can be used to decipher oncohistone-mediated tumorigenesis? **1 point**

- Top-down histone PTM analysis
- Chromatin reader profiling
- Genomic locus specific protein identification
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers: All of the above

7) A researcher hypothesized that EGFR functions in interacting X-protein during the signal transduction process. Which of the following technique he should do to validate his hypothesis? **1 point**

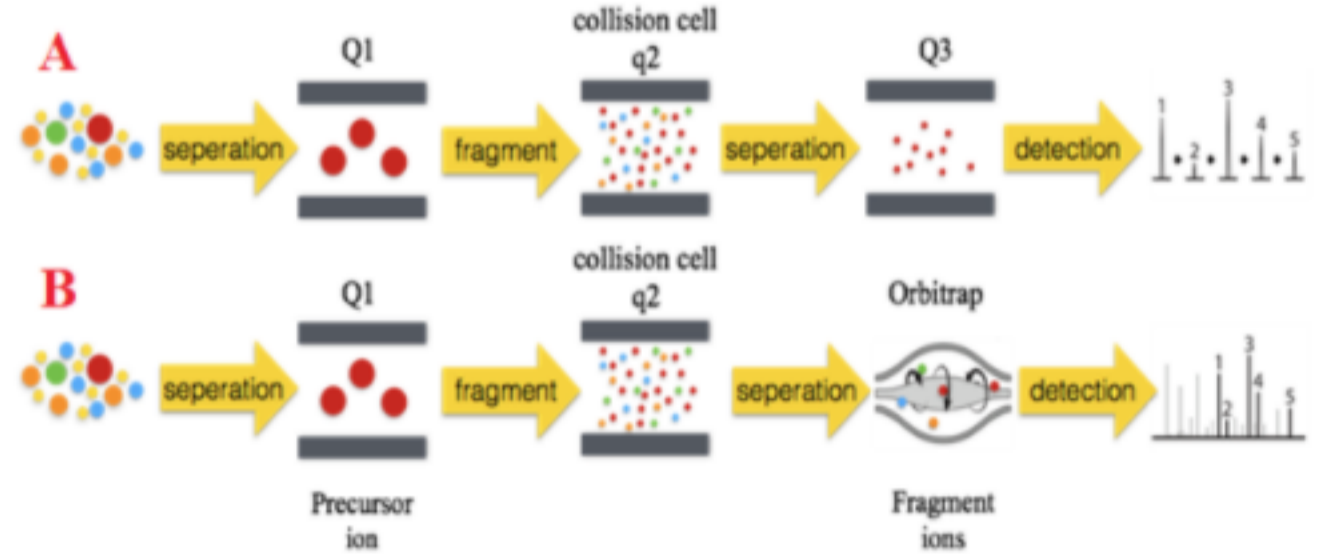
- SDS-PAGE
- SPR
- MALDI
- Immunoblot

No, the answer is incorrect.

Score: 0

Accepted Answers: SPR

8) Given below is the basic schematic diagram of two different targeted proteomics approaches. Question 8 is based on the figure provided. **1 point**



If you want to perform High Resolution/Accurate Mass (HRAM) measurement using parallel reaction monitoring (PRM), which of the above instruments should be used?

- A
- B
- Both A and B
- Neither of them

No, the answer is incorrect.

Score: 0

Accepted Answers: B

9) What parameters one should consider before designing a targeted proteomics experiment? **1 point**

- Unique peptide
- Retention time
- pI of a protein
- Collision energy

No, the answer is incorrect.

Score: 0

Accepted Answers: Unique peptide, Retention time, Collision energy

10) In an MRM experiment you are monitoring 300 transitions. The dwell time and pause time are 20 milliseconds and 1 millisecond, respectively. What would be the cycle time? **1 point**

- 6.0 seconds
- 6.3 seconds
- 6.5 seconds
- 6.8 seconds

No, the answer is incorrect.

Score: 0

Accepted Answers: 6.3 seconds