X

NPTEL

reviewer4@nptel.iitm.ac.in ▾

Courses » Applications of interactomics using Genomics and proteomics technologies

Announcements Course Ask a Question Progress FAQ

Unit 6 - Week 5

Register for Certification exam

Course outline

How to access the portal

Week 1

Week 2

Week 3

Week 4

Week 5

- Lecture 21 : Antibody signatures defined by high-content peptide microarray analysis
- Lecture 22 : An overview of label-free technologies-I
- Lecture 23 : An overview of label-free technologies-II
- Lecture 24 : Mass Spectrometry coupled Interactomics-I

Assignment 5

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

Due on 2019-04-03, 23:59 IST.

1) What are the advantages of label-free detection platform over label-based detection methods? ***1 point***

i) Cost-effective
ii) Labelling tags do not interfere with the properties of molecular interactions
iii) Since these platforms are not readily available, the data generated are quite unique and therefore less of a competition
iv) Allows real-time measurement of molecular interactions

- i & ii
- i, ii & iii
- i, ii, & iv
- i, ii, iii, & iv

No, the answer is incorrect.
Score: 0

Accepted Answers:
i, ii, & iv

2) Which among the following is NOT an advantage of peptide microarray? ***1 point***

- Peptide fragments are short and can be synthesized chemically
- Since the peptides are small fragments proper folding is not an issue
- Peptides in isolation may not form a proper 3-D structure that is required for enzymatic activities
- Screening several peptides sequences provides the knowledge of sequence preference in proteins

No, the answer is incorrect.
Score: 0

Accepted Answers:
Peptides in isolation may not form a proper 3-D structure that is required for enzymatic activities

experiment on your instrument and on an established platform (like Biacore T200), analyse the results and compare both the measurements

Select an established interacting partner through previous literature, perform multiple interaction experiments on your instrument to check for the reproducibilty, analyse the results and compare the measurements with the reported literature performed on an established platform (like Biacore T200)

Select an established interacting partner through previous literature, perform multiple interaction experiments on your instrument and on an established platform (like Biacore T200) with similar conditions, analyse the results and compare the measurements

No, the answer is incorrect.
Score: 0

Accepted Answers:
Select an established interacting partner through previous literature, perform multiple interaction experiments on your instrument and on an established platform (like Biacore T200) with similar condition analyse the results and compare the measurements

4) **Answer Question 4 to 6 based on the information given below:** ***1 poi***

Ryan wants to study interacting partners of Rab5 protein (Mol. wt. 23KDa) that helps in maturation of endosomes. Since, endosome formation is highly conserved across the eukaryotes, Ryan selected two cell lines, one from human and another from *Drosophilla* origin, to understand the mechanisms of endosomal maturation in both the organisms. At a particular time point the cells were formalin fixed and were lysed. Further, ultra-centrifugation of the lysed cells was performed to decrease the complexity and noise. The sub-cellular fraction containing endosomes were taken to look for the interacting partners of Rab5 proteins. Immunoprecipitation was performed, and the beads containing the bait and prey were washed properly, and the protein complex was eluted from the beads using elution buffer.

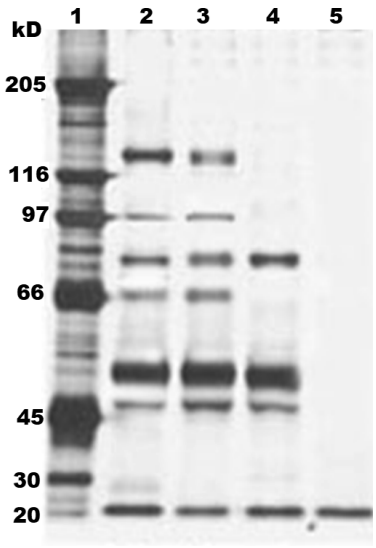
4) After obtaining the complex of Rab5 with other interacting partners, Ryan performed electrophoresis to identify the number of interacting partners of Rab5 protein. Which electrophoresis should Ryan perform?

- Sodium Dodecyl Sulphate Polyacrylamide Gel Electrophoresis
- Native Polyacrylamide Gel Electrophoresis
- Two-Dimensional Polyacrylamide Gel Electrophoresis
- Gradient Polyacrylamide Gel Electrophoresis

No, the answer is incorrect.
Score: 0

Accepted Answers:
Sodium Dodecyl Sulphate Polyacrylamide Gel Electrophoresis

5) Ryan performed electrophoresis to find the number of interactome of Rab5 protein and obtained the gel image given below. Predict the plausible number of interacting proteins of Rab5 in Human and *Drosophila* respectively, just by looking at the gel image. ***1 point***



1: Ladder
2&3: Interacting partners obtained from Human cell lines
4: Interacting partners obtained from *Drosophila* cell lines
5: Rab5 protein

- 6 and 3
- 7 and 4
- 8 and 5
- 5 and 2

No, the answer is incorrect.
Score: 0

Accepted Answers:
6 and 3

6) What should be the next step, Ryan should follow to identify maximum possible interacting proteins of Rab5 in both *Drosophilla* and Human? ***1 point***

- In-gel Digestion of the entire gel followed by mass spectrometric analysis
- In-gel Digestion of only the prominent bands in each lane followed by mass spectrometric analysis
- In-gel Digestion of the prominent bands of only lane 2 followed by spectrometric analysis as the bands in other lanes are over lapping
- In-gel Digestion of entire lane, and each lane separately, followed by mass spectrometric analysis

No, the answer is incorrect.
Score: 0

Accepted Answers:
In-gel Digestion of entire lane, and each lane separately, followed by mass spectrometric analysis

7) Which ions do you get in case of ETD fragmentation? ***1 point***

- a & b-ions
- b & y-ions
- c & z-ions
- a & x-ions

No, the answer is incorrect.
Score: 0

Accepted Answers:
c & z-ions

8) When should ETD fragmentation be performed? ***1 point***

- To fragment large biomolecules
- To study metabolome of an organism
- To identify peptide sequence
- To study post-translational modifications

No, the answer is incorrect.
Score: 0

Accepted Answers:
To study post-translational modifications

9) Match the following reagents with their role: ***1 point***

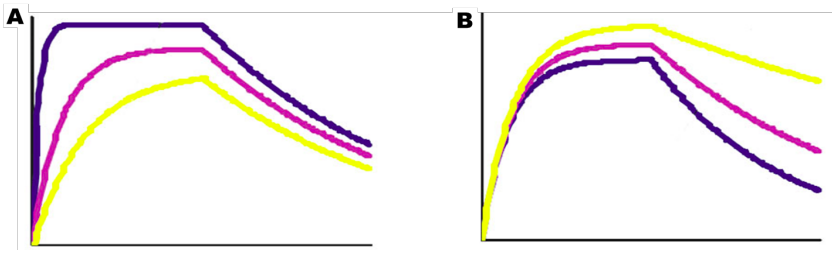
1) Dithiothreitol	i) Denaturation
2) Urea	ii) Digestion
3) Idoactetamide	iii) Reduction
4) Trypsin	iv) Alkylation

- 1-ii, 2-iii, 3-iv, 4-i
- 1-ii, 2-iii, 3-iv, 4-i
- 1-iii, 2-iv, 3-i, 4-ii
- 1-iii, 2-i, 3-iv, 4-ii

No, the answer is incorrect.
Score: 0

Accepted Answers:
1-iii, 2-i, 3-iv, 4-ii

10) Analyse the given sensorgram carefully and select the correct answer. ***1 point***



- x-axis: Time (t), y-axis: Reaction unit (RU), Sensogram A: Faster on-rates, Sensogram B: Faster off-rates
- x-axis: Time (t), y-axis: Response unit (RU), Sensogram A: Faster on-rates, Sensogram B: Faster off-rates
- x-axis: Time (t), y-axis: Response unit (RU), Sensogram A: Slower on-rates, Sensogram B: Faster off-rates
- x-axis: Time (t), y-axis: Reaction unit (RU), Sensogram A: Slower on-rates, Sensogram B: Faster off-rates

No, the answer is incorrect.
Score: 0

Accepted Answers:
x-axis: Time (t), y-axis: Response unit (RU), Sensogram A: Faster on-rates, Sensogram B: Faster off-rat

Previous Page End