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NPTEL

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Courses » Proteins and Gel-Based Proteomics

Announcements **Course** Ask a Question Progress

Unit 5 - Week-3: Two-dimensional gel electrophoresis (2-DE)

Course outline

How to access the portal

Introduction to Gel-Based Proteomics

Week-1: Basics of amino acids and proteins

Week-2: Gel-based proteomics and sample preparation

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

L11. 2-DE: Rehydration, IEF & Equilibration

L12. 2-DE: Second dimension, staining & destaining

L13. 2-DE: Gel analysis

L14. 2-DE: Applications

L15. 2-DE: Applications (contd.) & Challenges

Lab session- 3.1: Demonstration of gel analysis using IQTL software

Week-3 Assignment-3

The due date for submitting this assignment has passed. **Due on 2016-04-13, 23:45 IST**. As per our records you have not submitted this assignment.

1) In two dimensional gel electrophoresis (2-DE) experiment, the equilibration step involves which of the following process? 0.5 points

- Reduction and then alkylation
- Alkylation and then reduction
- Alkylation and reduction together
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Reduction and then alkylation

2) Which of the following component leads to the clogging of immobilized pH strip and could form complexes with proteins by electrostatic interactions? 0.5 points

- Polysaccharides
- Nucleic acids
- Lipids
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

3) Your protein sample has a lot of phosphorylated proteins. In this light, which of the following stain would you prefer to use for the detection of phosphorylated proteins specifically? 0.5 points

- Pro-Q Diamond
- Coomassie Brilliant Blue
- Silver stain
- SYPRO Ruby

No, the answer is incorrect.

Score: 0

Accepted Answers:

Pro-Q Diamond

- Week-3
Assignment
Answer Key
- Quiz : Week-3
Assignment-3

**Week-4:
Difference gel
electrophoresis
(DIGE) & Mass
spectrometry**

4) Sandhya has performed protein extraction using TRIzol method and obtained 720 micrograms of protein from the sample. She has to run two-dimensional gel electrophoresis (2-DE) using 18 cm IPG strip and further wants to identify the proteins using mass spectrometry. Select the closest amount of protein she should be using to start her 2-DE experiment? 0.5 points

- 300-1000 μg
- 125-240 μg
- 1000-1500 μg
- 100-300 μg

No, the answer is incorrect.

Score: 0

Accepted Answers:

300-1000 μg

5) Which of the following pH range IPG strip would you use if your sample contains proteins with acidic pI values? 0.5 points

- 7-10
- 3-6
- 3-10
- 5-7

No, the answer is incorrect.

Score: 0

Accepted Answers:

3-6

6) Rohan when visualized his 2-DE gel after the gel staining, found vertical streaks in the gel. Which of the following factor may cause such streaking pattern in the gel? 0.5 points

- Low acrylamide percentage in gel
- Presence of low abundant proteins
- Presence of interfering compounds like salts
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Presence of interfering compounds like salts

7) In a gel there are two proteins with same isoelectric point but they differ in their molecular weight. What will be the position of these protein spots on the gel with respect to each other? 0.5 points

- At same position
- They will be overlapped
- Adjacent to each other
- Vertical to each other

No, the answer is incorrect.

Score: 0

Accepted Answers:

Vertical to each other

8) You ran two protein samples in two separate 2-DE gels. Now you want to study and compare the differentially expressed proteins. Which of the following software can be used for the 2-DE gel analysis? 0.5 points

- Image Master Platinum (IMP7)
- Mascot



- Spectrum mill
- Lab solution

No, the answer is incorrect.

Score: 0

Accepted Answers:

Image Master Platinum (IMP7)

9) Which of the following is the correct sequence of events followed for 0.5 points serum proteomics studies?

- Depletion, Sonication, Protein precipitation, Quantification
- Dilution, Quantification, Depletion, Sonication, Protein precipitation
- Sonication, Depletion, Protein precipitation, Quantification
- Protein precipitation, Quantification, Depletion, Sonication

No, the answer is incorrect.

Score: 0

Accepted Answers:

Sonication, Depletion, Protein precipitation, Quantification

10) Which of the following statement is NOT correct for 2-DE rehydration 0.5 points process?

- Salts are removed in the process
- Mineral oil is added to prevent strip from drying
- Activates the charge group on the IPG strip
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Salts are removed in the process

11) In 2-DE, the component of the gel which maintains the pH gradient is/are called..? 0.5 points

- ampholytes.
- TEMED.
- zwitter ions.
- polyacrylamide.

No, the answer is incorrect.

Score: 0

Accepted Answers:

ampholytes.

12) In 2-DE, second dimensional electrophoresis is done at _____ degree angle relative to the first dimension. 0.5 points

- 60
- 180
- 90
- 30

No, the answer is incorrect.

Score: 0

Accepted Answers:

90

13) In 2-DE gel analysis software, which parameter is used to compare gels on spot-by-spot basis? 0.5 points

- Crop tool



- Zoom tool
- Image overlaying
- Spot analysis

No, the answer is incorrect.

Score: 0

Accepted Answers:

Spot analysis

14) Which of the following staining dye is NOT compatible with Mass spectrometer? 0.5 points

- Coomassie Brilliant Blue
- SYPRO Ruby
- Silver stain
- Dual stain

No, the answer is incorrect.

Score: 0

Accepted Answers:

Silver stain

15) In silver staining, the reaction is stopped by adding..? 0.5 points

- methanol
- acetic acid
- ethanol
- water

No, the answer is incorrect.

Score: 0

Accepted Answers:

acetic acid

16) Which of the following statement(s) is correct about isoelectric focusing (IEF)? 0.5 points

- Proteins are resolved on the basis of their pI
- Involves the use of immobilized pH gradient
- Presence of salts interfere in IEF process
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

17) Which of the following statement(s) is true for Image Quant TL (IQTL) software? (Note: Questions from 17-20 are lab session-based questions) 0.5 points

- It can remove the background by background subtraction option
- It can be used for quantitative proteomics study
- It can employ standards for molecular weight studies
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

18) In Image Quant TL (IQTL) software, which method is preferred for 1D-gel analysis of complex proteins? 0.5 points

- Automatic



- Stepwise
- Both a and b
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Stepwise

19 Which of the following analysis cannot be performed by Image Quant TL (IQTL) software? 0.5 points

- Colony counting
- Array analysis
- DIGE analysis
- 1D-gel analysis

No, the answer is incorrect.

Score: 0

Accepted Answers:

DIGE analysis

20 You had run a SDS-PAGE gel and wanted to analyze differentially expressed proteins from serum samples. You were doing analysis using Image Quant TL (IQTL) software and wrongly selected one of the following parameter, which did not give you desired results. What is that option in software? 0.5 points

- Fixed the bandwidth
- Automatic bandwidth
- Automatically band detection
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Fixed the bandwidth



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