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Unit 4 - Week 3

Register for Certification exam

Course outline

How to access the portal

Week 1

Week 2

Week 3

- Lecture 11 : Using functional proteomics to identify biomarkers and therapeutic targets-II
- Lecture 12 : Applications of protein microarrays in Malaria Research-I
- Lecture 13 : Applications of protein microarrays in Malaria Research-II
- Lecture 14 : Applications of protein microarrays in Cancer Research-I

Assignment 3

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2019-03-20, 23:59 IST.**

1) When you scan your microarray slide, you see several saturated spots. What will you do in such a case? ***1 point***

- Increase PMT settings so that more spots become saturated
- Lower PMT settings to reduce spot intensity
- Increase PMT settings to increase the number of bright spots
- Lower PMT settings to lower the background signals

No, the answer is incorrect.
Score: 0

Accepted Answers:
Lower PMT settings to reduce spot intensity

2) Which of the following options are in the correct order in case of a microarray experiment. ***1 point***

- Normalization----Power calculation----Image processing---- PCA plot
- Power calculation----Image processing---Normalization---PCA plot
- Image processing---- PCA plot---Normalization---Power calculation
- PCA plot---Image processing---Power calculation---Normalization

No, the answer is incorrect.
Score: 0

Accepted Answers:
Power calculation----Image processing---Normalization---PCA plot

3) Imagine that you are performing a microarray experiment where chips are probed with dengue positive patient sera to study IgG responses? You plan to use the slide shown below which can probe 4 patient sera simultaneously. Viral proteins are printed on the slide as *In vitro* transcription and translation (IVTT) spots just like the Nucleic Acid Programmable Arrays (NAPPA). The slide also has several other control spots. Answer the following questions (Q3 to Q6) based on your experiment. ***1 point***

3) Based on the printed spots on your slide, which one of the following can NOT be a positive control in your experiment?

- IgG spots
- Human IgG spots
- Purified viral protein spots
- IVTT spots

No, the answer is incorrect.
Score: 0

Accepted Answers:
IVTT spots

4) What else can you study using a similar microarray slide and patient samples? ***1 point***

- Only IgG responses in patients
- IgG responses and protein interactions
- Depends on the antibody
- Depends on the detection system

No, the answer is incorrect.
Score: 0

Accepted Answers:
Depends on the antibody

5) What will you do after you finish your experiment and the slides are dry? ***1 point***

- You will use a GPR file to scan your slides
- You will use the Gal file that you created to scan your slides
- You will export the GPR file provided by the manufacturer as an excel sheet
- You will use a Gal file after scanning your slides

No, the answer is incorrect.
Score: 0

Accepted Answers:
You will use a Gal file after scanning your slides

6) While you are performing the experiment, you forget one main step. After scanning, you see that your slide has very faint signals for all 4 patients. Which step could that most likely be from the options below? ***1 point***

- You forgot to add secondary antibody
- You did not wash your slides after addition of tertiary antibody
- You did not incubate the sera with E. coli lysate before hybridization
- You did not cover your slides after addition of tertiary antibody

No, the answer is incorrect.
Score: 0

Accepted Answers:
You did not cover your slides after addition of tertiary antibody

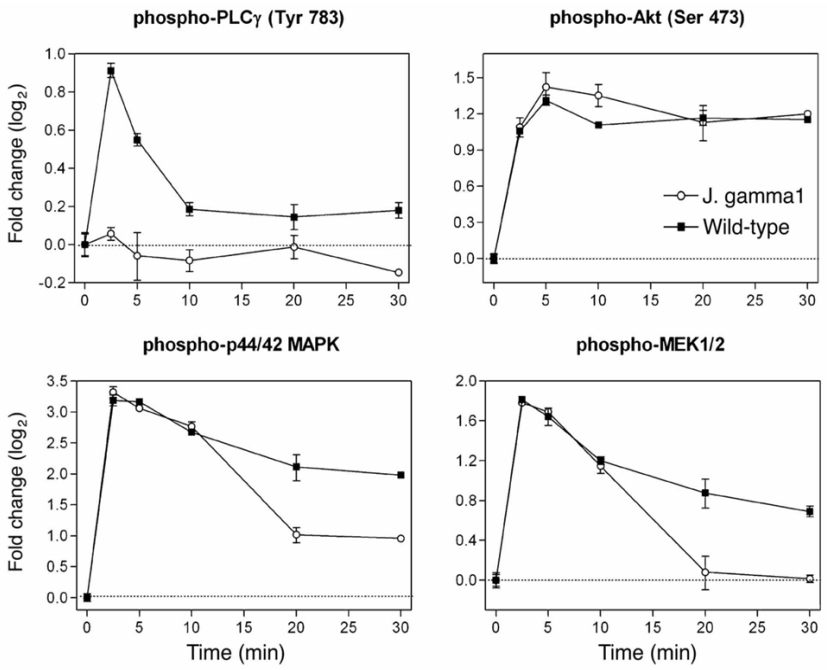
7) While analyzing your data you realize that you need to include an important patient data which you did not add earlier. This data will help you segregate the sample population into two groups. What will you do? ***1 point***

- You will rescan the slides
- You will classify the samples into two groups and redo the hybridization
- You will map the new patient data to the existing datasheet and re-analyze it
- You cannot include this data in your study anymore

No, the answer is incorrect.
Score: 0

Accepted Answers:
You will map the new patient data to the existing datasheet and re-analyze it

8) **Answer Question 8 and 9 are based on the information given below:** ***1 point***
Phosphorylation of PLCγ1 at Tyr8783 activates the enzymatic activity of PLCγ1 which is crucial event of signal transduction of T-lymphocytes upon stimulation of T-cell receptors. In order to map the downstream signalling pathways of activated PLCγ1, Chan et al., stimulated the Jurkat T lymphocytes and J.gamma1 cells, a mutant line of Jurkat T cells deficient in PLCγ1 with antibodies to CD3 + CD28 and compared the phosphorylation kinetics of four signalling proteins (PLCγ1, Akt, p44/42 MAPK and MEK1/2). The phosphorylation level of all the four proteins over the period of 30 min is provided in the graph below. Analyse the graph given below and answer question 8 and 9.



8) Despite knowing the fact that the J.gamma1 cell lines are deficient in PLCγ1, phosphorylation kinetics of PLCγ1 was studied in both the cell lines and probed the lysates with phospho- PLCγ1. What could be the plausible reason?

- To check if the phospho-PLCγ1 antibody is cross-reacting with other proteins
- To ensure that J.gamma1 cell lines are deficient in PLCγ1
- To check the levels of PLCγ1 in both the cell lines
- To study the downstream signalling kinetics

No, the answer is incorrect.
Score: 0

Accepted Answers:
To ensure that J.gamma1 cell lines are deficient in PLCγ1

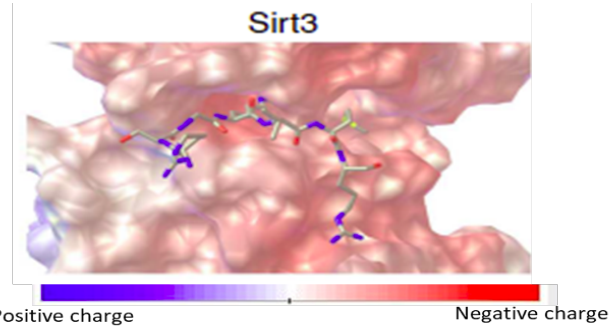
9) Look into the graphs carefully and specify that the phosphorylation kinetics of which protein is independent of the presence of activated PLCγ1? ***1 point***

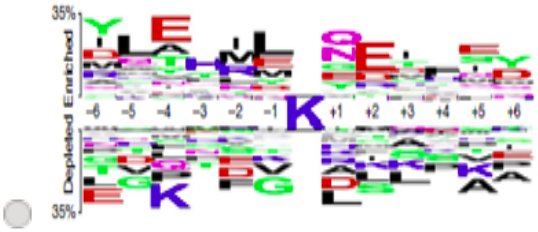
- Akt (Ser 473)
- p44/42 MAPK
- MEK 1/2
- None of the above

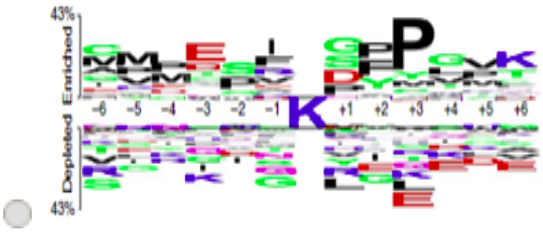
No, the answer is incorrect.
Score: 0

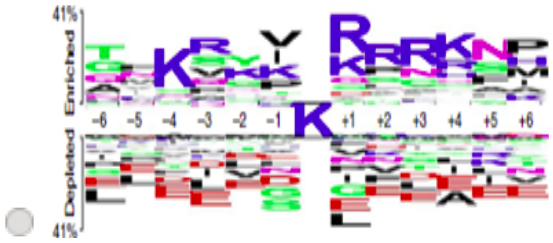
Accepted Answers:
Akt (Ser 473)

10) The peptide binding domain of Sirt3 contains highly negative amino acids (given in the image below). Select the peptide sequence that should be preferred by Sirt3 protein. ***1 point***



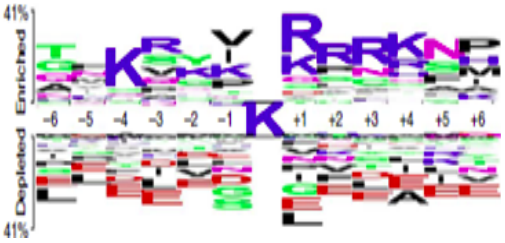






No, the answer is incorrect.
Score: 0

Accepted Answers:



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