

Practice Questions Relevant to Lecture 20 for Exam 2

Answer key on last page

Lecture 20 – Insulin Signaling

1. True OR False IRS is phosphorylated before it docks with the p85-PI3K complex.
2. True OR False The receptor subunit that contains the insulin binding site also contains the tyrosine kinase domain to facilitate its activation.
3. True OR False Insulin receptor substrate-1 docking protein is phosphorylated by a membrane-associated tyrosine kinase.
4. True OR False Insulin binds to the beta-subunit of the insulin receptor.
5. True OR False Insulin binding causes phosphorylation of the alpha-subunit of the insulin receptor.
6. Calcium promotes the biosynthesis and processing of insulin by:
 - A. activating protein kinase A.
 - B. activating the protease that removes the C-peptide.
 - C. stimulating the formation of disulfide bonds in proinsulin.
 - D. increasing the synthesis of DAG (diacylglycerol).
 - E. binding to calmodulin to activate calmodulin kinase.
7. Insulin's ability to promote glucose transport includes the phosphorylation, by the insulin receptor tyrosine kinase, of a component in the cytoplasm of adipose cells. This component is:
 - A. SHC.
 - B. IRS.
 - C. Ras.
 - D. Raf.
 - E. beta subunit of the insulin receptor.
8. The C-peptide:
 - A. links the α subunit to the β and γ subunits of the G_s protein.
 - B. is also known as calmodulin.
 - C. links the A and B chains of the insulin molecule in proinsulin.
 - D. binds calcium to facilitate the activation of protein kinase C.
 - E. links the α and β subunits of the insulin receptor.
9. Glucose promotes the biosynthesis and processing of insulin in the pancreatic β -cells by:
 - A. increasing the intracellular concentration of C-peptide.
 - B. activating protein kinase A.
 - C. increasing the intracellular concentration of calcium.
 - D. increasing the formation of AMP to activate glycolysis.
 - E. increasing the intracellular concentration of potassium.
10. The specific disease caused by autoimmune destruction of the β -cells of the pancreas is:
11. What is generally the initiating event in Type II diabetes?
12. **DRAW A DIAGRAM** showing the steps leading to the complete activation of both tyrosine kinases of the insulin receptor

ANSWER KEY

Lecture 20 – Insulin Signaling

1. TRUE
2. FALSE
3. TRUE
4. FALSE
5. FALSE
6. E
7. B
8. C
9. C
10. TYPE I DIABETES
11. INSULIN RESISTANCE OF PERIPHERAL TISSUES

12. DRAW A DIAGRAM showing the steps leading to the complete activation of both tyrosine kinases of the insulin receptor

SEE LECTURE 20 FIGURE 4