HSS 2305

PRETEST : Chapter 15

Multiple choices

1) A transduction pathway can be seen in:

a) multicellular organisms only

b) unicellular and multicellular organisms

c) humans only

d) bacteria and humans only

2) The binding of _____ to a specific receptor protein in a liver cell's plasma membrane leads to the activation of glycogen phosphorylase

a) aldosterone

b) insulin

c) epinephrine

d) glucagon

3) What is true about a hydrophobic hormone as a signalling molecule?

a) it will cross the plasma membrane

b) it will have a specific cell response by first binding to a receptor located on the cell surface

c) the complex hormone-receptor will have an effect by acting as a transcription factor

d) a and c are good

4) What can a relay molecule be?

a) an inactivated protein kinase A

b) an activated protein kinase A

c) the last protein responsible for the cell activity

d) a and b are good

5) Epinephrine can induce:

a) a flight-and-fight response

b) a glycogen breakdown

c) the production of glucose 6-phosphate

d) all these possibilities are correct

6) Here a list of statements of the signal transduction pathway:

1) Activation of specific genes in the nucleus cannot be allowed by a signal transduction pathway; other mechanisms are involved

2) Bacterial infections can be due to malfunction of a G protein in the complex GPCR

3) During a phosphorylation cascade, dephosphorylation of active protein kinases is very harmful to the cell and can cause its destruction

4) A signalling pathway involving a hydrophilic hormone can only produce a response in the cytoplasm, none in the nucleus: _____

Which combination is good?

a) 2 only

b) 4 only

c) all are good

d) all are false

7) In a signal transduction pathway, the enzyme called glycogen phosphorylase can be considered as:

a) a signalling molecule

b) a molecule the most closed to the cell response

c) a complex hormone – plasma membrane receptor

d) a kinase-phosphorylating molecule

8) Up to now _____ GPCRs are well known by researchers

a) 10

b) 100

c) 1000

d) 10 000

9) Which organ is particularly the aldosterone target?

a) kidney

b) heart

c) skeletal muscle

d) brain

10) A GPCR is a protein…

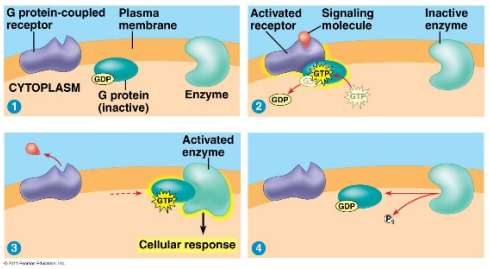
a) larger than hemoglobin

b) made of a chain of amino acids in secondary structure for most part

c) acting as a cell signalling molecule

d) able to bind to hydrophobic hormones

11) According to this picture:



a) GDP is able to displace a GTP

b) the inactive enzyme may be adenylyl cyclase

c) the signalling molecule is always destroyed after triggering a cell response

d) a complex GDP-G protein binds to an inactivated enzyme

12) During a signalling transduction pathway, protein phosphatase (PP)

a) catalyses the removal of phosphate group form a kinase

b) phosphorylates inactive kinase into its active form

c) phosphorylates GDP into GTP

d) dissociate the G protein from its receptor

True or false

1) A signalling molecule acts as a ligand: T

2) A signalling molecule can come from the inside of a cell: F

3) Insulin resistance means that liver cells no longer respond to insulin: T

4) By definition, a transduction is the binding of a hormone with a receptor: F

5) A paracrine signalling can be seen between a cell that is releasing a growth factor and the cell that receives it: T

6) A steroid hormone causes a cell response by activating a cascade of kinase phosphorylation: F

7) Tyroxine kinases constitute the largest family of plasma membrane receptors: F

8) G-protein coupled receptors are able to bind to hydrophilic signalling molecules: T

9) In a transduction pathway involving GPCR, a kinase phosphate is important so as to remove a phosphate group from a protein: T

10) About the involvement of a cAMP in the GPCR signalling pathway, this is adenylyl cyclase that converts ATP into cAMP: T

11) In a signalling pathway, a response in the cytoplasm is indicated by the activation of a gene leading to the synthesis of a protein: F

12) About the receptor tyrosine kinase, the cytoplasmic tail contains many amino acids tyrosine: T

13) In a signal transduction pathway, receptor proteins are located only on the cell surface: F

14) Yeast can perform a signal transduction pathway: T

15) Endocrine signalling and hormone signalling are just the same: T

16) Reorganization of the cytoskeleton, unlike cell division, is a response triggered by a transduced signal: F