1. **As you studied the 7-transmembrane helix receptors (7TM) ; how can you describe it's alpha helices ?**

A- hydrophilic in nature, hydrophobic structure.

B- hydrophilic structure, hydrophobic in nature.

C- amphipathic structure, hydrophobic in nature.

D- amphipathic in nature, hydrophilic structure.

E- none of the above.

Answer is A

2. **Which of the following describes a difference between EGF and GH receptors?**

A) GH receptors must bind to 3 GH molecules while EGF receptors need only bind to 2 EGF molecules.

B) GH receptors are 7-TM receptors whereas EGF receptors are Receptor Tyrosine Kinases.

C) GH receptors exist as monomers in their inactive form whereas EGF receptors are dimers in their inactive form.

D) None of the above

E) All of the above

Answer is D

3. **Which of the following acts to release Ca++ from the ER ?**

a) DAG

b) IP3

c) Glucagon.

d) NO

e) -1,25dihydroxycholecalcefirol

4. **a scientist discovered a mutation in insulin receptor that may be associted with insulin resistance and therefore diabetes mellitus, this mutation is likely to be:**

a) Gain of function mutation in RAS protein.

b) increased tyrosine kinase activity.

c) decreased affinity for insulin in insulin binding site.

d) inability to phosphorylate tyrosine residues in intracellular alpha chain.

E) more than one of the above.

Answer is C

5. **ACTH is a tropic hormone released by the anterior pituitary, it activates the reaction that converts cholesterol to pregnenolone (the rate limiting step in the synthesis of adrenocortical steroid hormones), a deficiency in ACTH will affect the synthesis of all these hormones exept:**

a) cortisol

b) calcitonin

c)thyroxin

d)aldosterone

E)more than one of the above.

Answer is E

6. **Which of the following hormones bind mainly to intracellular receptors?**

A)insulin

B)GH

C)calcitonin

D)thyroxin

E)c+d

Answer is D

7. Characteristics of intracellular receptors that regulate gene transcription include all of the following except

A) a DNA binding site

B) an extracellular binding site

C) A transcription activating domain

D) May be signaled by lipid soluble molecules

Answer is B

8. Intracellular receptors include those for

A) Progesterone

B) Vitamin D

C) cortisol

D) Thyroid hormone

E) All of the above

Answer is E

9. One protein kinase cascade begins with the phosphorylation of the

A) JAK protein

B) STAT protein

C) RAS protein

D) GAT protein

Answer is C

10. the signaling molecules that travel the farthest are

A) Paracrine

B) endocrine

C) Neurotransmitter

D) Intracellular

Answer is B

11. All of the following statements apply to G proteins except

A) G proteins transmit a signal from the cell surface to the interior of the cell
B) All G proteins have a similar structure**)**
C) G proteins do not use second messengers but transmit the signal directly into the nucleus
D) G proteins act to amplify the signal creating a cascade response in the cell
E) G protein underlie the actions of many medications

Answer is C

12. the substrate of the enzyme that catalyzes the production of inositol triphosphate is

A) PLC
B) PIP2
C) DAG
D) PKC

Answer is B

13. Calmodulin and other calcium binding protein contain super secondary structure that binds calcium which is

A) Helix Loop Helix

b) Helix turn Helix

C) Beta barrel

D) Greek key motif

Answer is A

14. all of the following about Catecholamine synthesis is true except

A) Tyrosine hydroxylase catalyzes the rate-limiting step

B) Inhibitors of MAO = antidepresive drugs

C) The decarboxylation of DOPA will result in Dopamine

D) just like the eicosanoids ; they are FA derivates

Answer is D

15. All of the following statements regarding the thyroid hormones are true, EXCEPT:

a) Thyroid hormones (bound and free) are in an equilibrium state in the serum

b) Free and bound thyroid hormones in the plasma are of equal concentrations

c) more than 60% of the triiodothyronine production is contributed by the extra-thyroid tissues

d) The enzyme that is responsible for the conversion of t4 into t3 is located in the cytoplasm

e) The follicular cells contain the enzymes that are responsible for the production of thyroglobulin, which is found in the colloid

Answer is B

16. Hormones are able to effectively reach their target cells by:

a) Being secreted from an organ related/near to the target cells

b) Having a high Kd

c) Having a high affinity for the target receptor

d) Minimal regulation of the gland the hormones are being secreted from

e) b + c

Answer: C

17. One of the following equations describes the permissive interaction between proteins?

H1=10 /H2=10

a) H1+H2=20

b) H1+H2=100

c) H1+H2=0

d) H1+H2=10

18. what is the sequence of amino acids in TRH?

a) Cooh_Gln_His_Pro_NH2

b) Cooh_Glu_HIs_Pro_NH2

c) Cooh_Pro_His_Gln_NH2

d) Cooh_Pro_His_Glu_NH2

19.The minimal number of domains in a receptor for growth hormone is:

a) 1

b) 2

c) 3

d) 4

e) 5

20. the type of bond in hormone_receptor binding is:

a) Hydrogen bonding
b) Covalent bond
c) Hydrophobic bond
d) Ionic bond
e) Di sulfide bridges

21. i don't know if this question is scientifically correct….

If a hormone was released from a cell with a concentration X and then transported through the blood , once reaching its target cell its concentration was 1oo times less than the original . the hormone was bound to its receptor with a high affinity Kd=1 and produced a high response.

In a scientific experiments the receptor was modulated so that it can bind to its hormone with less affinity Kd=100 what is concentration of the hormone needed to be released by the secretory cells to achieve the same previous action?

22. One of the following is correct regarding the 7-transmembrane helix receptor?

a) alpha helices insertion into the membrane is mediated through extensive disulfide bridges
b) its cytoplasmic side is rich in serine and threonine as they can be phosphorylated changing the receptor activity
c) don't use second messenger
d) it is not involved in viral infection process
e) none of the above is correct

Answer is B

23. A genetic researcher is trying to identify a potential gene from gene signature /motif that encodes a seven-helix transmembrane domain. Which of the following is an example of glycosylated, integral membrane protein with seven transmembrane segments?

A) adenylate cyclise
B) beta- adrenergic receptor for epinephrine
C) cystic fibrosis transmembrane conductance regulator channel
D) glucose transporter
E) Na+ / K+ ATPase

Answer is B

24. how many CA++ need to saturate the 3 calmodulain :

A- 2

B-4

C-6

D-8

25. All of the following about Calcium Binding Proteins is true except:

a) Contain a high content of both charged/uncharged polar amino acids
b) Contain high content of negatively charged Aspartic Acid and Glutamic Acid
c) Calcium fits in between the E alpha helix – Loop – F alpha helix
d) The globular region of Calmodulin has one EF Hand
e) The change of one amino acid will change the whole amino acid sequence.

26. Which of the following hormone/neurotransmitter-precursor pairs is not correct:

a) Nitric oxide – Arginine

b) Thyroid hormones – Tyrosine

c) Dopamine – Phenylalanine

d) MSH – POMC

e) All of the above is true

Answer is E.

27. All of the following are true about hormone receptors except:

a) They bind to hormones very precisely, despite their low concentration compared to other structurally similar compounds.
b) They are very specific and should be saturable within the concentration provided.
c) All receptors have only two domains: one to recognize the hormone and the other to transduce the signal
d) Certain signals can either up- or down-regulate them by affecting the rates of their genes' transcription.
e) All of the above is true.

Answer is C

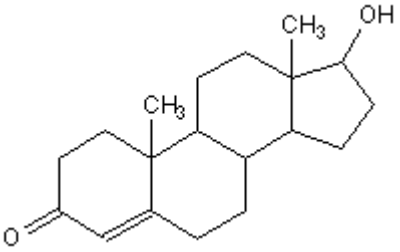
28. Cortisone is a synthetic steroid that inhibits PL-A2. Which of the following will occur after administration of this drug?

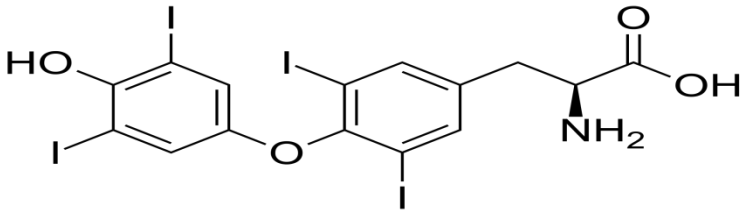
Answer → Arachidonic acid will not be used for the synthesis of steroids.

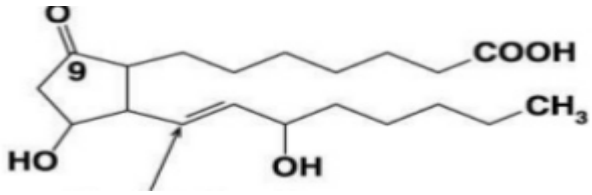
I couldn't find other suitable choices

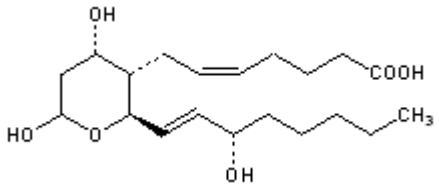
29. Selenium is an important antioxidant that's needed for the normal activity of many enzymes, among which thyroxine deiodinase is our concern in this place. PKU

patients eat protein-restricted diets, and so they are at risk of selenium deficiency. If a PKU patient with selenium deficiency was treated with cortisone (an inhibitor of PL-A2), which of the following structures will not be formed in sufficient amounts as a result of both the deficiency and cortisone treatment?

a) 

b) 

c) 

d) 

e) All of the above

f) More than one of the above

g) None of the above

Answer → f (b+c+d)

30. The common intermediate in the synthetic pathways of all steroid hormones is:

a) Cholesterol

b) Pregnenolone

c) Progesterone

d) A+B are common

e) None of the above

Answer is B

31. Many hormones act on GPCRs (G-protein-coupled receptors), and many of these target phospholipase C. Regarding this signaling system, choose the correct statements:

a) IP3 is the main second messenger ***
b) IP3 and DAG are the main products, and both of them can function simultaneously.
c) Without calcium ions, one domain of PK-C occupies the binding site of the enzyme and thus inhibits it. ***
d) All PL-C isoforms can be associated with GPCRs.
e) Calcium fits this signaling pathway because of the concentration difference. ***

32. There are 3 Hormones (A / B / C) , All of them act on the same gland & none of them produce the same effect , if you Know that there is no effect on the gland when there is a combination between hormones A & B then what's the possible interaction(s) between hormones A & C??

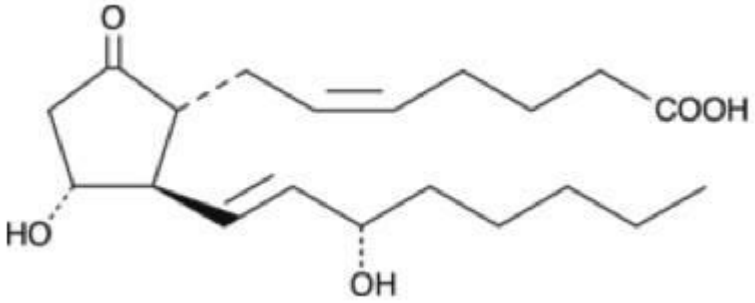
a. Permissive, integrative, synergistic, antagonistic.
b. Permissive, integrative.
c. Synergistic, integrative, permissive.
d. Integrative, synergistic, antagonistic.
e. Permissive interaction.

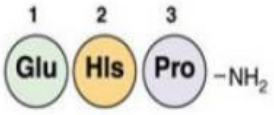
Answer is E

33. What of the following is correct with regard to the following structure?

a) It is originated from 18-carbon arachidonic acid after PL-A2 separates it from the membrane
b) It causes vasodilation
c) If we block lipoxygenase pathway we block its synthesis
d) When saturating it, the yielded product would have one double bond

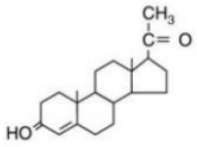
e) None of the above is correct.
Answer is B





A

Kd=5



B

Kd=17

34. Regarding the above hormone structures, chose the correct answer:

a) Hormone A is a hydrophilic hormone with lower affinity to its receptor compared to B.

b) Hormone B is circulating in the blood binding to plasma proteins, so longer half-life with faster binding compared to A.
c) For the same number of hormone molecules, binding of hormone B is stronger than A using a second messenger system.
d) Hormone A needs shorter time to get the final response with higher affinity than B.
e) None of the above.

Answer is D

35. insulin causes blood glucose level to fall,but glucagon cause these levels to rise , the relationship between these 2 hormones :

a) permissive
b) expressive
c) antagonistic
d) synergistic

Answer is C

36. which of the following statements BEST describe the action of sex hormones :

a) binding with specific membrane receptor
b) they interact with DNA directly
c) they cause release of second messenger from cell membrane
d) enhance transcription when bounded to receptors e-2+4 are correct

Answer is D they bind to the receptor then act on DNA

37. endocrine system can be influenced by which of the following :

a) central nervous system
b) peripheral nervous system
c) ca
d) all of the above

Answer is D

38. hormone receptors posses all of the following except :

a) all of them are proteins
b) they have a recognition domain
c) bind hormones with a high degree of specificity
d) number of the receptor on the cell membrane are constant

Answer is D they may increase or decrease (up regulate or down regulate)

39. one of the following statements is correct :

a) hormone receptor binding is irreversible
b) number of receptors in a target cell is constant
c) all requires carier in the plasma
d) some of them increase transcription of genes

Answer is D

40. influence of the anterior pituitary hormone on the hypothalamus is an example :

a) short loop feedback
b) ultra short loop feedback
c) long loop feedback
d) non of the above

Answer is A

41. Which of the following statements about G proteins is NOT correct:

a) G proteins are involved in the signaling by lipid-soluble hormones such as steroids
b) G proteins can either stimulate or inhibit adenylyl cyclise
c) G proteins are involved in the signaling of a large class of receptors that have a similar general structure consists of 7 membrane-spanning domains
d) G proteins can couple a receptor to the opening of an ion channel

Answer is A