بسم الله الرحمن الرحيم

Past Papers

MID – Lecture 10 to 12

cytology and molecular

﴿ وَإِن تَتَوَلَّوْا يَسْتَبْدِلْ قَوْمًا غَيْرَكُمْ ثُمَّ لَا يَكُونُوا أَمْثَالَكُم ﴾

اللهم استعملنا ولا تستبدلنا

Written by:

- Ammar Abusheikha
- Mazen nashash

Q1: Which of the following proteins are abundant in the extracellular matrix:

a) Tubulin
b) Myosin
c) Actin
d) Collagen
e) More than one answer

Answer: D

Q2: Which of the following proteins is a transmembrane protein responsible for anchoring the extracellular matrix :

a) Integrins
b) Laminin
c) Fibronectin
d) Collagen type IV
e) Collagen type VII

Answer: A

Q3: Which of the following is the primary structural component of the basal lamina?

a) Type IV collagen
b) Entactin
c) Laminin
d) Integrins
e) Fibronectin

Answer: A

Q4: What is not a function of extracellular matrix of animal cells?

a) Cell adhesion
b) Cell division
c) Cell motility
d) Cell differentiation
e) DNA replication

Answer: E

Q5: Which of the following is true regarding Focal adhesions?

A. Transmit information to the cell interior that may lead to changes in cell adhesion, proliferation or survival

B. Contain integrins that develop transient interactions with the extracellular matrix

C. Have been implicated in cell locomotion

D. Collect information about the chemical properties of the extracellular environment

E. All of these are correct

Answer: E

Q6: Which of the following mediate the interactions between the leukocytes and blood vessel endothelial cells?

A. Selectins
B. Immunoglobulin super family proteins
C. Focal adhesion
D. Calmodulins
E. Cadherins

Answer: A

Q7: The ECM components attached to cell membrane by?

A. protein
B. phospholipid
C. glycoprotein
D. Glycolipid
E. Could be more than one answer

Answer: A

Q8: What is the importance of integrin receptor molecules?

A. Cell substratum interaction
B. Cell signaling pathway
C. Act as enzymes
D. A and B
E. A and B and C

Answer: D

Q9: What is the difference between (selectin and cadherins)?

A. Selectin are formed between different types of cells but the cadherins between same the types of cells

B. Selectin formed between same cells but cadherins between different cells

C. No difference between them

D. It depends on the location of the cells

E. Selectins have stable cell junctions while cadherins don’t

Answer: A

Q10: What is the type of bond that connects between 2 similar polypeptide of fibronectin?

A. covalent

B. disulfide

C. polar covalent

D. ionic

E. No connection

Answer: B

Q11: What kind of molecule does not pass through a gap junction?

A. ions

B. cAMP

C. inositol phosphates

D. Ribosomes

E. cGMP

Answer: D

Q12: Attachment of an integrin to its ligand can induce which of the following responses within a cell?

A. Changes in cytoplasmic pH

B. Changes in cytoplasmic C2+ ion concentration

C. Protein phosphorylation

D. Gene expression

E. All of these are correct.

Answer: E

Q13: Each connexon in a gap junction is constructed of how many connexin subunits?

A. 2

B. 4

C. 6

D. 8

E. 10

Answer: C

Q14: Most protein kinases transfer phosphate groups to which amino acid(s)?

A. glutamate
B. threonine
C. serine
D. tryptophan
E. 2 and 3

Answer: E

Q15: Sometimes an enzyme is activated by a receptor and brings about the cellular response by generating a second messenger.
Such an enzyme Is called a(n):

a) Activator

b) Effector

c) Affecter

d) Refractor

e) Generator

Answer: B

Q16: No matter how the signal initiated by the binding of an extracellular ligand is, what is the outcome of that signal?

a) A protein in the middle of an intracellular signaling pathway is activated.

b) A protein at the top of an intracellular signaling pathway is activated.

c) A protein at the top of an extracellular signaling pathway is activated.

d) A protein at the top of an intracellular signaling pathway is deactivated.

e) A protein at the bottom of an intracellular signaling pathway is activated.

Answer: B

Q17: What role do activated steroid receptors play in the cell?

a) Activation of inactive enzymes

b) Inactivation of active enzymes

c) ligand-regulated transcription factors

d) Opening of specific ion channels

e) Activation of cytoplasmic proteins

Answer: C

Q18: Which of the following are not natural ligands that bind to G-protein coupled receptors?

a) hormones

b) neurotransmitters

c) chemoattractants

d) opium derivatives

e) steroid hormones

We didn't fully take all the options, just know E is definetly wrong,

Answer: E

Q19: Place the events below in the correct order.

1) G protein binds to activated receptor forming a receptor-G protein complex
2) Release of GDP by the G protein
3) Change in conformation of the cytoplasmic loops of the receptor
4) Binding of GTP by the G protein
5) Increase in the affinity of the receptor for a G protein on the cytoplasmic surface of the membrane.
6) Binding of a hormone or neurotransmitter to a G-protein coupled receptor
7) Conformational shift in the 'a' subunit of the G protein

a) 6 – 3 – 5 – 1 – 2 – 4 – 7
b) 3 – 6 – 5 – 1 – 7 – 2 – 4
c) 6 – 3 – 5 – 1 – 7 – 2 – 4
d) 6 – 7 – 3 – 5 – 1 – 2 – 4
e) 6 – 3 – 5 – 1 – 7 – 4 – 2

Answer: C

Q20: Place the following events in the proper order.

1) Activation of one or more cellular signaling proteins.

2) Dissociation of Gα from the G protein complex.

3) Production of a second messenger, like cAMP.

4) Replacement of GDP by GTP on the Gα after interaction with an activated GPCR.

5) Conformational change in the Gα subunit causing a decreased affinity for the G βγ-subunit.

6) G α-subunit with its attached GTP activates an effector like adenylyl cyclase.

a) 4 – 5 – 2 – 6 – 3 – 1
b) 5 – 4 – 2 – 6 – 3 – 1
c) 4 – 6 – 2 – 5 – 3 – 1
d) 4 – 5 – 2 – 3 – 1 – 6
e) 1 – 5 – 2 – 4 – 3 – 6

Answer: A

Q21: How is signaling by an activated Gα subunit terminated?

a) The bound GTP is hydrolyzed to GMP.

b) The bound GDP is hydrolyzed to GTP.

c) The bound GTP is hydrolyzed to GDP.

d) The bound GDP is phosphorylated to GTP.

e) The Gα subunit releases GDP and binds GTP.

Answer: C

Q22: are enzymes that phosphorylate specific tyrosine residues on protein substrates.

a) Protein tyrosinases

b) Protein-tyrosine kinases

c) Tyrosine pronases

d) Proteokinases

e) Tyrokinases

Answer: B

Q23: Which of the following features would be a requirement for a receptor that exhibits ligand-mediated dimerization?

a) The ligand has only one binding site for receptors.

b) The ligand has two binding sites for receptors.

c) The receptor must have a phenylalanine residue in a specific location.

d) The receptor must have a molecular weight of 50,000 daltons.

e) Ligand binding causes a conformational shift that reveals a binding site for another receptor.

Answer: B

Q24: Once the kinase domain of receptor protein-tyrosine kinase has been activated, what does the activated receptor protein-tyrosine kinase do?

a) The receptor subunits denature.

b) Each receptor subunit phosphorylates its partner on tyrosine residues found in regions adjacent to the kinase domain.

c) Each receptor subunit phosphorylates itself on tyrosine residues found in regions adjacent to the kinase domain .

d) The receptor subunits dephosphorylate each other.

e) The receptor subunits refold into a more effective conformation.

Answer: B

Q25:Which enzyme is inhibited by CAMP:

A.Glycogen phosphorylase kinase
b. Protein kinase A (PKA)
c. Glycogen synthase
d. Glycogen phosphorylase kinase
e. Glycogen phosphorylase

Answer: c

Q26:Protein kinase A, Except:

a. inhibits glycogen synthase
b. is activated by CAMP
c. activates glycogen phosphorylase kinase
d. phosphorylates glycogen synthase
e. activates glycogen synthesis & breakdow

Answer: e

Q27:Which of the following mediate the interactions between leukocytes and blood vessel endothelial cells?

A- Selectins.
B- Focal adhesion.
C- Immunoglobulin super family proteins.
D- Cadherins.
E- Calmodul

Answer: A+C

Q28: Which answer shows the correct order of the flow of information during cell signaling

A)Cellular response, change in gene expression, signal transduction, receptor-ligand binding

B)Receptor-ligand binding, cellular response, signal transduction, change in gene expression

C) Signal transduction, cellular response, change in gene expression, receptor-ligand binding

D) Change in gene expression, signal transduction, receptor-ligand binding, cellular response

E) Receptor-ligand binding, signal transduction, cellular response, change in gene expression

Answer: E

Q29:Selectins mediate interactions between which of the following?

A) leukocytes and blood vessel endothelial cells
B) muscle cells and ECM
C) nerve cells and other nerve cells
D) intestinal epithelial cells with neighboring cells E) skin cells in different skin layers

Answer: A

Q30:What integral membrane protein family made of two membrane-spanning chains (alpha and beta) is involved in attaching cells to their extracellular microenvironment?

A) myosins
B) glycophorins
C) integrins
D) laminins
E) fibronectins

Answer: C

Q31:Which components are responsible for Ca+2 production?

A. Endoplasmic reticulum
B. Ribosomes
C. Mitochondria
D. Endoplasmic reticulum and mitochondria
E. A+b

Answer: A

Q32:When cell move signals to its surface the signaling is:

A. Autocrine
B. Paracrine
C. Endocrine
D. Exocrine
E. None of the above

Answer: A

Q33: If experimentally linked α/β heterodimer integrin subunits are separated, what happens?

A. The molecules bind their ligand tightly

B. The molecules are unable to bind a ligand.

C. The molecules are cleaved.

D. The molecules denature their ligand.

E. The molecules are denatured and degraded.

Answer: B

Q34: What is the largest protein superfamily encoded by animal genomes?knowledge improvement

a) G-protein coupled receptors

b) RTKs

c) steroid receptors

d) tubulin superfamily

e) ligand-gated channels

Answer: A

Q35: How do cells in the body of a multicellular organism usually communicate with each other?

a) intracellular messenger molecules

b) direct connection by cells through long projections

c) extracellular messenger molecules

d) electrical signals between cells

e) ion transport between cells

Answer: C

Q36: What kinds of responses are not initiated when signals traveling down signaling pathways reach their target proteins?

a) A change in gene expression

b) A change in ion permeability

c) Cessation of DNA synthesis and degradation of DNA

d) The death of the cell

e) An alteration of the activity of metabolic enzymes

Answer: C

Q37: Why do cells flatten out as they contact a surface?

A. They lose water.

B. They extrude cytoplasm.

C. They send out projections that make increasingly stable attachments.

D. Their membranes stiffen.

E. They make focal assignations.

Answer: C

For any feedback, scan the code or click on it.

Corrections from previous versions:

Versions	Question #	Before Correction	After Correction
V1 → V2			
V2 → V3			