

# Important Questions on Cell Signalling



1. Following column is given:

- |                                  |                                       |
|----------------------------------|---------------------------------------|
| A) Cyclic AMP                    | I. Vision Regulation                  |
| B) Endocrine signalling molecule | II. Followed by T-Lymphocyte          |
| C) Autocrine signalling          | III. Used in intracellular signalling |
| D) Gi Family                     | IV. Used in extracellular signalling  |

Choose the option with the correct match.

- A. A-II, B-IV, C-III, D-I
- B. A-III, B-IV, C-II, D-I
- C. A-I, B-IV, C-II, D-III
- D. A-III, B-II, C-IV, D-I

2. Monomeric G protein family which regulates the growth of cell is known as:

- A. Rho
- B. Ran
- C. Rab
- D. Ras

3. Which type of signalling requires the physical contact between the cells?

- A. Juxtacrine signalling
- B. Autocrine signalling
- C. Paracrine signalling
- D. Intracellular signalling

4. Which signalling molecule does not interact with cell surface receptor from the given options?

- A. Gastrin
- B. Testosterone
- C. Glucagon
- D. Insulin

5. In simple type of nerve reflex, active signalling molecules are known as:

- A. G Proteins.
- B. Proteases.
- C. Neurotransmitter.
- D. Nitric oxide.

6. Name the protein signalling molecules that alters the glucose uptake in humans, and is located in different type of cell where glucose is used as fuel.

- A. NGF
- B. Acetylcholine
- C. Insulin
- D. None

7. Match the following and choose the correct option:

- |                          |                      |
|--------------------------|----------------------|
| I) cAMP                  | A) Amines            |
| II) cGMP                 | B) Neurotransmitters |
| III) Synaptic signalling | C) Adenylate cyclase |
| IV) Norepinephrine       | D) Guanine cyclase   |

Options

- A. I-C, II-D, III-B, IV-A
- B. I-D, II-C, III-B, IV-A
- C. I-C, II-B, III-D, IV-A
- D. I-C, II-D, III-A, IV-B

8. Following statements are given about MAP kinase:

- I. Becomes active when they phosphorylated by MEK kinase
- II. MAP kinase is activated by Ras pathway
- III. They are responsible for stimulate the transcription of target gene
- IV. They phosphorylate their target on tyrosine residue

Choose the correct statement.

- A. I & II
- B. II, III & IV
- C. III & IV
- D. None

9. Which of the following molecules take part in cell signalling?

- A. Zinc fingers
- B. Protein kinase C
- C. Cytochrome p450
- D. All of these

10. Which of the following is single pass protein that act as self-marker?

- A. MHC
- B. GTP
- C. GMP
- D. MCA

###ANSWERS###

1. B
2. D
3. A
4. B
5. C
6. C
7. A
8. B
9. B
- 10.A



###SOLUTIONS###

1.

Cyclic AMP works as secondary messenger which is used in intracellular signalling and endocrine molecule works as extracellular signalling molecules in cell signalling. In signalling pathway in response to antigenic molecule, T lymphocyte synthesize some growth factors which amplify the immune response that is autocrine type signalling. G family protein involved in vision signalling is known as Gi or transducing.

2.

Ras is monomeric type G protein family that control the cell growth by serine threonine protein kinase. It works as cyclic manner on inactive GTP bound form to active GTP bound form.

3.

Juxtacrine signalling is a type of signalling which requires physical contact between the cells. In this type of signalling, signals do not travel in distance and never acts on the same cell.

4.

Testosterone is a type of steroid hormone and it is able to cross cytosolic membrane and can interact with nuclear receptor and cytosolic receptor that's why it does not bind with surface receptor.

5.

In simple type of nerve reflex chemicals which acts as signal are called as neurotransmitters; acetylcholine is an example of that type of molecule.

6.

Insulin is a hormone secreted by pancreas, and it acts as a signalling molecule in glucose metabolism and its receptor belongs to the tyrosine kinase superfamily.

7.

cAMP is signalling molecule which is responsible for the production of adenylate cyclase enzyme and through cGMP guanine cyclase is produced.; neurotransmitters are the chemical which mediate synaptic signalling and norepinephrine is amine type of hormone.

8.

Mitogen activated protein kinase known as MAP kinase is a protein type which is specific to amino acid serine and threonine; it is activated by Ras pathway, and stimulate repression of the transcription of target gene. They phosphorylate their target on tyrosine residue.

9.

Out of the three, only protein kinase C is a signaling molecule, Zinc finger is a structural protein motif and cytochrome p450 is a heme protein.

10.

MHC molecules are found on nucleoid cells, and act as signals to the immune system. These are known as normal self-cell, and are single pass transmembrane protein.

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