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1. Protein folding is a process in which a polypeptide folds in to \_\_\_\_\_

- a) 2-D structure
- b) Globular form
- c) 3-D structure
- d) Linear form

View Answer

Answer: c

Explanation: Protein folding is a process in which a polypeptide is folded into a 3-dimensional conformation which is necessary for proper protein function. Failure to fold can produce inactive protein. A protein molecule folds during or after its biosynthesis.

2. Chaperones are the molecular protein which assists in proper protein folding or prevents them from aggregating.

- a) True
- b) False

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Answer: a

Explanation: Molecular chaperones are proteins which binds to incompletely folded protein to assist their proper folding. These proteins also assist the formation of oligomeric structures and for transport of proteins by membranes.

3. Which of them contains all the information required to fold the polypeptide chain in its 3-D structure?

- a) DNA sequences
- b) RNA
- c) Histone protein
- d) Amino acid sequences

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Answer: d

Explanation: The native conformation of a protein is determined by its amino acid sequences. This hypothesis was proved by an experiment, in which denaturation followed by renaturation folds the chain in its native structure.

4. Which sentence is INCORRECT regarding molten globule state of protein?

- a) Hydrophobic interaction among non-polar residues
- b) The collapsed state
- c) It is less compact
- d) The denatured state

View Answer

Answer: d

Explanation: Molten globule is a state in which interior side chains remain mobile, less compact and there is no proper packing. This state is completely different from the native and denatured state.

5. Which of the following name is given to molecular chaperones?

- a) Allosteric protein
- b) Heat shock protein
- c) Denaturation protein
- d) Ribonuclease

View Answer

Answer: b

Explanation: The ability of chaperones to synthesis in large amount after a brief exposure to elevated temperature(42°C) makes them heat shock protein(Hsp). Basically, the eukaryotic cell has two major families of chaperones called Hsp60 and Hsp70.

6. Which of these heat shock proteins prevent protein misfolding and maintain polypeptide chain in the unfolded state.

- a) Hsp60
- b) Hsp28
- c) Hsp70
- d) Hsp32

View Answer

Answer: c

Explanation: Hsp70 is induced by stress and these are the primary proteins which prevent polypeptide chain from misfolding and maintained it in an unfolded state. It also helps in translocation of the protein from the cytosol into ER or mitochondria.

7. Among all the heat shock proteins which one is known as chaperonins?

- a) Hsp70
- b) Hsp32
- c) Hsp60
- d) Hsp30

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Answer: c

Explanation: Hsp60 family of chaperones forms a large barrel-shaped structure that acts later when protein is being fully synthesized. Chaperonins bind incorrectly folded, partly folded or unfolded protein but not in their native state.

8. Which one of the following reagent is also known a Sanger's reagent?

- a) 1-fluoro-2,4-dinitrobenzene (FDNB)
- b) Phenylisothiocyanate
- c) Cyanogen bromide
- d)  $\beta$ -mercaptoethanol

View Answer

Answer: a

Explanation: FDNB reacts with a free amino group of N-terminal amino acid in alkaline solution to form yellow dinitrophenol. This reaction was first used by Sanger to determine the primary structure of the polypeptide hormone.

9. Proteolytic enzyme trypsin cleaves protein at which of these specific sites?

- a) Carboxyl side of Alanine, Glycine
- b) Carboxyl side of Lysin or Arginine
- c) Carboxyl side of aromatic amino acid
- d) The amino side of aromatic amino acid

View Answer

Answer: b

Explanation: The specificity of these enzymes determined by the side chain of amino acid on either side of a peptide bond. This cleavage is necessary to sequence protein which is made up of more than 50 amino acid residues.

10. Mark the correct statement which depicts the correct statement of protein assay?

- a) To determine the amount of protein
- b) To characterize the function of the protein
- c) To determine the structure of the protein
- d) To determine the sequence of the protein

View Answer

Answer: a

Explanation: Protein assay is a technique to determine the amount of protein in an unknown solution. It is done by measuring the absorbance at 280nm. Aromatic side chain containing amino acids like tyrosine, tryptophan, and phenylalanine exhibit strong UV light absorbance.