What is the Golgi Apparatus?

Worksheet

The Golgi apparatus is the cell's 'post office' - it modifies, sorts, and packages proteins and lipids received from the ER into vesicles bound for the plasma membrane, lysosomes, or secretion.

Questions

1. Which face of the Golgi receives material from the ER?

A) Trans face
B) Cis face
C) Apical face
D) Basal face

2. What happens to proteins as they move through the Golgi cisternae?

A) They are destroyed
B) They are modified, e.g., glycosylated
C) They are converted to DNA
D) They lose their amino acids

3. Where do finished vesicles leave the Golgi from?

A) Cis face
B) Nuclear envelope
C) Trans face
D) Mitochondrial membrane

4. A protein tagged with mannose-6-phosphate in the Golgi is most likely headed to

A) The lysosome
B) The nucleus
C) The mitochondria
D) The cell wall

5. An antibody protein is finished being processed by the ER. Trace its path through the Golgi to secretion.

6. A digestive enzyme needs to end up inside a lysosome. How does the Golgi direct it there?

7. A cell needs to build new plasma membrane proteins. What role does the Golgi play?

8. Define: What is the Golgi apparatus?

9. Define: What is the cis face of the Golgi?

10. Define: What is the trans face of the Golgi?

Answer Key

1. B) Cis face - The cis face faces the ER and receives incoming vesicles.

2. B) They are modified, e.g., glycosylated - Enzymes progressively modify proteins as they move through.

3. C) Trans face - The trans face ships out finished, sorted vesicles.

4. A) The lysosome - Mannose-6-phosphate is the classic lysosomal targeting tag.

5. The vesicle carrying the antibody fuses with the cis face of the Golgi. As it moves through the cisternae, enzymes glycosylate and finish folding it. At the trans face it's sorted and packaged into a secretory vesicle that fuses with the plasma membrane to release the antibody outside the cell.

6. The enzyme enters the Golgi at the cis face and is tagged with a mannose-6-phosphate marker. The trans face recognizes this tag during sorting. The enzyme is packaged into a vesicle that becomes (or fuses with) a lysosome.

7. Membrane proteins arrive from the ER and pass through the Golgi stack for modification. The Golgi sorts them by their destination signal for the plasma membrane. Vesicles bud off and fuse with the plasma membrane, inserting the new proteins.

8. A stack of membrane sacs that modifies, sorts, and packages proteins and lipids from the ER.

9. The receiving side, facing the ER, where incoming vesicles fuse.

10. The shipping side, where finished vesicles bud off toward their final destination.