

Name: _____

Date: _____

Quiz name: MCDB3145 Quiz #4

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1. Cells are infected with a vesicular stomatitis virus (VSV) strain in which a viral gene (VSVG) is fused to the green fluorescent protein gene. When the chimeric protein is synthesized, what pathway does it follow from synthesis until it leaves the cell?

(A) RER, Golgi complex, mitochondria, plasma membrane, viral envelopes
 (B) RER, mitochondria, Golgi complex, plasma membrane, viral envelopes
 (C) RER, Golgi complex, plasma membrane, viral envelopes
 (D) RER, Golgi complex, viral envelopes, plasma membrane
 (E) Golgi complex, RER, plasma membrane, viral envelopes

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2. The separation of organelles or vesicles derived from different organelles is called _____.

(A) pulse-chase
 (B) electrophoresis
 (C) subcellular fractionation
 (D) dounce homogenization
 (E) cell division

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3. The endomembrane system when homogenized is broken up into vesicles, which are heterogeneous but similar in size. These vesicles can be purified and, after purification, often retain their biological activity. They are collectively referred to as _____.

(A) ribosomes
 (B) microsomes
 (C) lysosomes
 (D) minisomes
 (E) endosomes

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4. Which of the following is a function associated with the smooth endoplasmic reticulum in at least some cells?

(A) synthesis of steroid hormones
 (B) detoxification of many organic compounds, like barbiturates and ethanol
 (C) release of glucose into the bloodstream
 (D) sequestration of calcium Ca^{2+} ions within the luminal space
 (E) all of these are correct

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5. What are the two sites within a cell at which protein synthesis occurs?

(A) inner membrane surface of RER and free ribosomes
 (B) cytosolic surface of RER and cisternal surface of RER
 (C) free ribosomes and cytosolic surface of the SER
 (D) cytosolic surface of RER and cytosolic surface of SER
 (E) cytosolic surface of RER and free ribosomes

6. What are the differences between ribosomes that make secretory proteins and those that make proteins intended for the cytosol?

- A The ribosomes that make secretory proteins contain a region that recognizes the ER.
- B The ribosomes that make cytosolic proteins are larger.
- C The ribosomes that make secretory proteins are smaller.
- D There are no differences between them.
- E The ribosomes that make secretory proteins have extra subunits.

7. What effect does the binding of the SRP to the growing polypeptide chain and the ribosome have on protein synthesis?

- A Protein synthesis is terminated.
- B The ribosome dissociates.
- C Protein synthesis accelerates.
- D Protein synthesis ceases temporarily.
- E Protein synthesis ceases permanently.

8. Which of the proteins below is(are) not made on the membrane-bound ribosomes of the RER?

- A peripheral proteins of the inner surface of the plasma membrane
- B soluble lysosomal proteins
- C soluble ER proteins
- D extracellular matrix proteins
- E All of the above.

9. To what residue of a polypeptide are N-linked oligosaccharide chains attached as that polypeptide enters the RER lumen through the translocon?

- A serine
- B threonine
- C arginine
- D ninhydrin
- E asparagine

10. Which of the following processes does NOT take place in the Golgi complex?

- A glycosylation of glycoproteins and glycolipids
- B digestion of misfolded proteins
- C processing of membrane proteins
- D processing of lysosomal proteins

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Quiz name: Quiz 5

- Which of the following processes does NOT take place in the Golgi complex?
 - glycosylation of glycoproteins and glycolipids
 - processing of membrane proteins
 - processing of lysosomal proteins
 - digestion of misfolded proteins
- Targeting vesicles to a particular compartment includes the following steps EXCEPT:
 - movement of vesicles
 - coating of vesicles
 - tethering of vesicles
 - docking of vesicles
- Where are misfolded secretory proteins eventually destroyed?
 - in the Golgi complex
 - in the cytosol (cytoplasm)
 - in the SER
 - in the RER
 - in the nucleus
- How do protein coats select the cargo molecules to be carried by the vesicles they help to form?
 - They electromagnetically attract the correct cargo proteins.
 - The protein coats have a specific affinity for the cytosolic tails of integral membrane proteins that reside in the donor membrane.
 - The coats have a specific affinity for the luminal tails of integral membrane proteins that reside in the donor membrane.
 - The coat proteins directly attach to the cargo proteins in the lumen of the forming vesicles.
 - The coat proteins attach to the extracellular matrix.
- What GTP-binding protein plays a regulatory role by initiating vesicle formation and by regulating the assembly of the vesicle's COPII coat?
 - Gar1
 - Src
 - Ras
 - ARF1
 - Sar1
- Sec23 and Sec24 bind together to form a "banana-shaped" dimer. What is the purpose of this dimer?
 - Because of its curved shape, the dimer puts pressure on the membrane surface to help it disintegrate.

- B The dimer stabilizes the Golgi complex membrane.
 - C Because of its linear shape, it firms up the membrane.
 - D Because of its curved shape, the dimer puts pressure on the membrane surface to help it further bend into a curved bud.
 - E The dimer joins with other dimers to form a remarkably stable cage.
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7. What are the recognition signals for lysosomal enzymes that allow them to be localized correctly in lysosomes?
- A Lysosomal enzymes possess phosphorylated mannose residues on N-linked carbohydrate chains.
 - B Lysosomal enzymes possess sulfated mannose residues on N-linked carbohydrate chains.
 - C Lysosomal enzymes possess phosphorylated glucose residues on N-linked carbohydrate chains.
 - D Lysosomal enzymes possess sulfated mannose residues on O-linked carbohydrate chains.
 - E Lysosomal enzymes possess phosphorylated mannose residues on O-linked carbohydrate chains.
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8. What would happen if the enzyme that adds phosphate groups to the appropriate mannose residues on the carbohydrate chains of lysosomal enzymes were defective?
- A Lysosomal enzymes would be localized to lysosomes.
 - B Lysosomal enzymes would be localized to peroxisomes.
 - C Lysosomal enzymes would not exit the Golgi complex.
 - D Lysosomal enzymes would continue through the Golgi complex to secretory vesicles and would eventually be secreted.
 - E Lysosomal enzymes would be degraded.
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9. What is responsible for degrading misfolded proteins in the cytoplasm?
- A polysomes
 - B polyribosomes
 - C peroxisomes
 - D proteasomes
 - E spliceosomes
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10. What mediates the interaction between integral membrane proteins to be transported in COPII-coated vesicles and the COPII-coat?
- A ER export signals in the luminal tails of integral ER membrane proteins
 - B ER export signals in the cytosolic tails of integral ER membrane proteins
 - C ER export signals in ER phospholipids that interact with the membrane proteins
 - D ER export signals in carbohydrates on the cytosolic tails of integral ER membrane proteins
 - E ER export signals in carbohydrates on the luminal tails of integral ER membrane proteins

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Quiz name: Quiz 6

1. When Rab3 have bound to GTP, what do they do?

- (A) They fuse membranes directly.
 - (B) They pass through the membrane.
 - (C) They recruit specific cytosolic tethering proteins to specific membrane surfaces.
 - (D) They denature specific membrane proteins.
 - (E) They trigger formation of the trans-SNARE complex.
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2. Signaling receptors are usually marked for endocytosis and subsequent destruction by the covalent attachment of a "tag" to the cytoplasmic tail of the receptor while it resides at the cell surface. What is the name of the "tag"?

- (A) opsonin
 - (B) clathrin
 - (C) chaperonin
 - (D) ubiquitin
 - (E) transferrin
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3. With what is the space between the two membranes of the nuclear envelope continuous?

- (A) the spindle
 - (B) the ribosomes
 - (C) the Golgi complex
 - (D) the chromosomes
 - (E) the ER lumen
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4. What acts as an address directing lysosomal enzymes to lysosomes?

- (A) a lysosomal peptide
 - (B) mannose-6-sulfate residues on the enzyme
 - (C) mannose-6-phosphate residues on the enzyme
 - (D) a signal peptide on the enzyme
 - (E) a stroma transfer peptide on the enzyme
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5. Substances that enter the cell by receptor-mediated endocytosis bind receptors that collect in specialized domains of the plasma membrane called _____.

- (A) coated vesicles
 - (B) coated pits
 - (C) RME pits
 - (D) gap junctions
 - (E) phospholipids
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6. What molecules do the AP2 adaptors of the clathrin coat connect?

- A GGA adaptors and clathrin molecules
 - B the cytoplasmic tails of specific membrane receptors and clathrin molecules
 - C the luminal tails of specific membrane receptors and clathrin molecules
 - D the clathrin molecules and cargo molecules
 - E cargo molecules and the cytoplasmic tails of specific membrane receptors
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7. Which molecule below is a GTP-binding protein that is required for the release of a clathrin-coated vesicle from the membrane on which it was formed?

- A AP2
 - B GGA
 - C clathrin
 - D dynamin
 - E rab
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8. The inner leaflet of the plasma membrane contains elevated levels of _____, which plays an important role in the recruitment of proteins involved in clathrin-mediated endocytosis, like dynamin and AP2.

- A PI(4,5)P2
 - B PI(4)P
 - C PI(3,5)P2
 - D PI(3,4)P2
 - E PI(5)P
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9. Lipid species like the phosphoinositides can have a dynamic regulatory role because _____.

- A it can be rapidly formed by enzymes localized at particular places within the cell
 - B it can be rapidly formed by enzymes localized at particular times within the cell
 - C it can be rapidly destroyed by enzymes localized at particular places within the cell
 - D it can be rapidly destroyed by enzymes localized at particular times within the cell
 - E All of these are correct
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Typically, receptors for hormones or growth factors are destroyed during endocytosis, leading to a reduction in the cell's sensitivity to further stimulation by that particular hormone or growth factor. This is a mechanism by which cells regulate their ability to respond to extracellular messengers.

10. What is it called?

- A receptor annihilation
- B receptor down-regulation
- C super-signaling
- D endocytotic assignation
- E receptor up-regulation