

KEY FOR Quiz 1A for Monday 11-12

Your Name KEY KEY KEY Section # 101-104

1. **Amino acids differ because_____.** **Amino acids are linked together in proteins by_____.**
 - A. they have different side chains, peptide bonds
 - B. some are found in nucleic acids, phosphodiester bonds
 - C. some contain bound nucleotides, ester bonds
 - D. some are associated with saturated fatty acids, hydrophobic interactions
 - E. some are resistant to hydrolysis, hydrogen bonds

2. **Which of the following are considered part of the secondary structure of a protein?**
 - A. the alpha helix
 - B. the beta pleated sheet
 - C. disulfide bonds
 - D. only A and B are correct
 - E. A, B, and C are correct

3. **Fatty acids are found in**
 - A. monoglycerides
 - B. diglycerides
 - C. triglycerides
 - D. phospholipids
 - E. all of the above

4. **Fructose and galactose both have the structural formula $C_6H_{12}O_6$.** **They differ because**
 - A. fructose is found in starch while galactose is found in glycogen
 - B. only fructose is polymerized to make a structural carbohydrate
 - C. fructose is a keto sugar while galactose is an aldol sugar
 - D. only galactose is found in glycogen
 - E. only fructose is found in starch

5. **RNA and DNA differ because**
 - A. DNA contains phosphodiester bonds while RNA contains phosphoester bonds
 - B. only RNA contains ribose
 - C. only DNA is single stranded
 - D. only RNA contains purines
 - E. only DNA contains pyrimidines

6. **Peroxisomes**
 - A. contain hydrolytic enzymes
 - B. have an acidic internal environment
 - C. use oxygen in degradative reactions
 - D. use H_2O_2 to oxidize organic molecules
 - E. synthesize fatty acids for phospholipids

7. **All prokaryotic cells contain**
 - A. genetic information
 - B. a plasma membrane
 - C. ribosomes
 - D. only A and B are correct
 - E. A, B, and C are all correct

8. Free ribosomes are

- A. required for the synthesis of mitochondrial proteins
- B. involved in the synthesis of cytosolic proteins
- C. found only in eukaryotic cells
- D. only A and B are correct
- E. A, B, and C are all correct

9. Which of the following is NOT considered to be part of the endomembrane system?

- A. the rough ER
- B. the smooth ER
- C. the Golgi complex
- D. the peroxisome
- E. the lysosome

10. SDS-PAGE has been used

- A. to analyze different types of proteins in a biological membrane
- B. to characterize membrane proteins in their native conformation
- C. to measure the transport of proteins from the smooth ER to the Golgi
- D. to characterize the enzyme activities in the lysosome
- E. to isolate nuclear DNA

11. Peripheral proteins _____.

- A. are loosely associated with the membrane
- B. are only found in the smooth ER
- C. are only found in the cytosol
- D. bind on the hydrophobic portion of the membrane
- E. require a detergent for solubilization

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12. (3 points) Describe the pathway for the synthesis of a protein that is secreted from the cell.

Translation starts on a free ribosome (most will probably leave this off, check answers, probably OK to leave out), i) signal sequence is present at N terminus, ii) then the ribosome binds to RER, iii) transport vesicle, iv) Golgi, v) transport vesicle, vi) vesicle fuses with plasma membrane and protein is excreted.
 (They do not need to mention modification of sugars, etc.).

KEY FOR 1A

1A	2D	3E	4C	5B	6C
7E	8D	9D	10A	11A	

Quiz 1A #12

-- Grading Scheme

The key words are:

"Describe the pathway for the synthesis of a protein..."

We want to know about synthesis, not only secretion.

- 1) mRNA exits the nucleus
- 2) mRNA ~~is~~ begins to be translated into protein by the ribosome. (a free ribosome)
- 3) First few N-terminal Amino Acids are the signal sequence.
- 4) Signal Recognition Particle recognizes signal sequence and targets entire translation complex to rough ER membrane.
- 5) Protein synthesis continues directly into the ER lumen. - ie Co-Translation
- 6) Signal sequence cleaved
- 7) Post-translational modification, including glycosylation, occurs in the ER.
- 8) Protein is transported to Golgi in a transport vesicle
- 9) Protein is further packaged in Golgi
- 10) Protein is packaged in a secretory vesicle
- 11) Secretory Vesicle Fuses w/ Plasma membrane,

Partial list of wrong answers (how graded)

The signal recognition particle targets the ribosome to the ER. Then the protein is pumped into the ER.

- SRP does not bind to the ribosome itself.

- Glycosylation occurs in the ER not the Golgi.

- You must mention how proteins are localized during the pathway to get full credit.

- You must describe the pathway for a