

Chapter : 6: A Tour of the Cell
Chapter Quiz

1. A researcher wants to film the movement of chromosomes during cell division. Which type of microscope should he choose and why is it the best choice? (Concept 6.1)

- a) light microscope, because of its high resolving power
- b) transmission electron microscope, because of its high magnifying power
- c) scanning electron microscope, because of its ability to visualize the surface of subcellular objects
- d) transmission electron microscope, because of its high resolving power
- e) light microscope, because the specimen is alive**

2. Which of the following structures **cannot** be found in prokaryotic cells? (Concept 6.2)

- a) cytosol
- b) plasma membrane
- c) mitochondria**
- d) ribosomes
- e) RNA

3. A substance moving from outside the cell into the cytoplasm must pass through _____. (Concept 6.2)

- a) a microtubule
- b) several different organelle membranes
- c) a ribosome
- d) the nucleus
- e) the plasma membrane**

4. In terms of cellular function, what is the **most important** difference between prokaryotic and eukaryotic cells? (Concept 6.2)

- a) Eukaryotic cells can synthesize proteins but prokaryotic cells cannot.
- b) Eukaryotic cells contain a nucleus.
- c) Compartmentalization of the cytoplasm by membrane-bounded organelles occurs in eukaryotic cells.**
- d) Eukaryotic cells have a plasma membrane and prokaryotic cells do not.
- e) Eukaryotic cells are larger than prokaryotic cells.

5. Which of the following features do prokaryotes and eukaryotes have in common? (Concept 6.2)

- a) mitochondria, cytoplasm, plasma membrane
- b) ribosomes, plasma membrane, cytoplasm**
- c) nucleus, plasma membrane, ribosomes

- d) mitochondria, ribosomes, cytoplasm
- e) ribosomes, nucleus, plasma membrane

6. What is the functional connection between the nucleolus, nuclear pores, and the nuclear membrane? (Concept 6.3)

- a) Subunits of ribosomes are assembled in the nucleolus and pass through the nuclear membrane via the nuclear pores.**
- b) The nuclear pores are connections between the nuclear membrane and the endoplasmic reticulum that permit ribosomes to assemble on the surface of the ER.
- c) The nucleolus contains messenger RNA (mRNA), which crosses the nuclear envelope through the nuclear pores.
- d) Endoplasmic reticulum membrane is produced in the nucleolus and leaves the nucleus through the nuclear pores.
- e) None of the above is correct.

7. Of the following organelles associated with the endomembrane system, which group is primarily involved in synthesizing molecules needed by the cell? (Concept 6.4)

- a) lysosome, vacuole, ribosome
 - b) ribosome, rough endoplasmic reticulum, smooth endoplasmic reticulum
 - c) vacuole, rough endoplasmic reticulum, smooth endoplasmic reticulum
 - d) smooth endoplasmic reticulum, ribosome, vacuole
 - e) ribosome, rough endoplasmic reticulum, smooth endoplasmic reticulum**
- Vacuoles function primarily in storage*

8. Which of the following categories best describes the function of the rough endoplasmic reticulum? (Concept 6.4)

- a) breakdown of complex foods
- b) energy processing
- c) manufacturing**
- d) structural support of cells
- e) information storage

9. You would expect a cell with an extensive Golgi apparatus to _____. (Concept 6.4)

- a) make a lot of ATP
- b) secrete a lot of protein**
- c) move rapidly
- d) perform photosynthesis
- e) store large quantities of ions



10. A protein that ultimately functions in the plasma membrane of a cell is most likely to have been synthesized _____. (Concepts 6.3-6.5)

- a) on ribosomes on the nuclear envelope

- b) on free cytoplasmic ribosomes
- c) in the rough endoplasmic reticulum**
- d) in the mitochondria
- e) in the plasma membrane


11. Chloroplasts and mitochondria are thought to be of prokaryotic origin. One piece of evidence that supports this hypothesis is that these organelles contain prokaryotic-like ribosomes. These ribosomes are probably most similar to ribosomes found _____.

- a) free in the cytoplasm of eukaryotes
- b) on the rough ER
- c) in bacterial cells**
- d) The first two answers are correct.
- e) The first three answers are correct.




12. Which one of the following five membranes is most likely to have a lipid composition that is distinct from the other four? (Concepts 6.4  and 6.5 )

- a) endoplasmic reticulum
- b) plasma membrane
- c) mitochondrial outer membrane**
- d) lysosome membrane
- e) Golgi apparatus


(The mitochondria are not part of the endomembrane system and must synthesize their own lipids)

13. Which of the following is **not** a characteristic of mitochondria? (Concept 6.5 )

- a) Mitochondria are involved in energy metabolism.
- b) Mitochondria have more than one membrane.
- c) Mitochondria contain DNA and ribosomes.
- d) Mitochondria are independent of the endomembrane system.
- e) All of the above are characteristics of mitochondria.**


14. Which of the following organelles might be found inside other organelles? (Concepts 6.2 , 6.3 , and 6.5 )

- a) the nucleolus
- b) mitochondria
- c) ribosomes**
- d) transport vesicles
- e) No organelles are found inside of other organelles.


15. Which of the following cellular processes or characteristics is **not** related to the cytoskeleton? (Concept 6.6 )

- a) transmission of information from the cell surface to the interior of the cell


- b) movement of the chromosomes during cell division
- c) movement of cilia or flagella
- d) contraction of muscle cells
- e) **All of the above are related to the cytoskeleton**

16. Which of following structures are found in both plant cells and animal cells?
(Concept 6.6 )


- a) cell walls
- b) chloroplasts
- c) central vacuoles
- d) **mitochondria**
- e) none of the above

17. Which statement about the cytoskeleton is **incorrect**? (Concept 6.6 )


- a) Microtubules are hollow tubes of protein that provide structural support.
- b) Microfilaments are chains of proteins that resist stretching.
- c) Intermediate filaments are more permanent structures in cells compared to microfilaments and microtubules.
- d) Components of the cytoskeleton are often involved with movement of organelles within the cytoplasm.
- e) **Plant cells lack a cytoskeleton because they have a rigid cell wall.**

18. Cilia and flagella move due to the interaction of the cytoskeleton with which of the following? (Concept 6.6 )

- a) actin
- b) pseudopodia
- c) mitochondria
- d) tubulin
- e) **motor proteins**


19. Which of the following organelles, if any, lack membranes as part of their structure?
(Concepts 6.3- 6.7 )

- a) vacuoles
- b) ribosomes
- c) microfilaments
- d) The first two answers are correct
- e) **The second and third answers are correct.**


20. Dye injected into a plant cell might be able to enter an adjacent cell through a _____.
(Concept 6.7 )

- a) tight junction

- b) microtubule
- c) cell wall
- d) plasmodesmata**
- e) gap junction

21. Your intestine is lined with individual cells. No fluids leak between these cells from the gut into your body. Why? (Concept 6.7 )

- a) The intestinal cells are fused together into one giant cell.
- b) The intestinal cells are bound together by plasmodesmata.
- c) The intestinal cells are bound together by tight junctions.**
- d) The intestinal cells are bound together by gap junctions.
- e) The intestinal cells are bound together by the extracellular matrix

22. Which of the following statements correctly describes a common characteristic of a plant cell wall and an animal cell extracellular matrix? (Concept 6.7 )

- a) Both are permeable to water and small solutes.
- b) Both are synthesized in the ER and Golgi apparatus.
- c) Both are composed primarily of carbohydrates.
- d) The first two answers are correct.**
- e) The first three answers are correct.