

## Organelle Practice Questions

Name: \_\_\_\_\_

- \_\_\_\_\_ 1) All of the following are part of a prokaryotic cell *except*
- A) DNA.
  - B) a cell wall.
  - C) a plasma membrane.
  - D) ribosomes
  - E) an endoplasmic reticulum
- \_\_\_\_\_ 2) The volume enclosed by the plasma membrane of plant cells is often much larger than the corresponding volume in animal cells. The most reasonable explanation for this observation is that
- A) plant cells are capable of having a much higher surface-to-volume ratio than animal cells.
  - B) plant cells have a much more highly convoluted (folded) plasma membrane than animal cells.
  - C) plant cells contain a large vacuole that reduces the volume of the cytoplasm.
  - D) animal cells are more spherical, whereas plant cells are elongated.
  - E) plant cells can have lower surface-to-volume ratios than animal cells because plant cells synthesize their own nutrients.
- \_\_\_\_\_ 3) The evolution of eukaryotic cells most likely involved
- A) endosymbiosis of an aerobic bacterium in a larger host cell—the endosymbiont evolved into mitochondria.
  - B) anaerobic archaea taking up residence inside a larger bacterial host cell to escape toxic oxygen—the anaerobic bacterium evolved into chloroplasts.
  - C) an endosymbiotic fungal cell evolved into the nucleus.
  - D) acquisition of an endomembrane system, and subsequent evolution of mitochondria from a portion of the Golgi.
- \_\_\_\_\_ 4) Which organelle or structure is absent in plant cells?
- A) Mitochondria
  - B) Golgi vesicles
  - C) microtubules
  - D) centrosomes
  - E) peroxisomes
- \_\_\_\_\_ 5) A cell with a predominance of free ribosomes is most likely
- A) producing primarily proteins for secretion.
  - B) producing primarily cytoplasmic proteins.
  - C) constructing an extensive cell wall or extracellular matrix.
  - D) digesting large food particles.
  - E) enlarging its vacuole.
- \_\_\_\_\_ 6) The fact that the outer membrane of the nuclear envelope has bound ribosomes allows one to most reliably conclude that
- A) at least some of the proteins that function in the nuclear envelope are made by the ribosomes on the nuclear envelope.
  - B) the nuclear envelope is not part of the endomembrane system.
  - C) the nuclear envelope is physically separated from the endoplasmic reticulum.
  - D) small vesicles from the Golgi fuse with the nuclear envelope.
  - E) nuclear pore complexes contain proteins.
- \_\_\_\_\_ 7) Tay-Sachs disease is a human genetic abnormality that results in cells accumulating and becoming clogged with very large, complex, and undigested lipids. Which cellular organelle must be involved in this condition?
- A) the endoplasmic reticulum
  - B) the Golgi apparatus
  - C) the lysosome
  - D) mitochondrion
  - E) red blood cells
- \_\_\_\_\_ 8) The liver is involved in detoxification of many poisons and drugs. Which of the following structures is primarily involved in this process and therefore abundant in liver cells?
- A) rough ER
  - B) smooth ER
  - C) Golgi apparatus
  - D) nuclear envelope
  - E) transport vesicles

- \_\_\_\_\_ 9) Which plant cell organelle contains its own DNA and ribosomes?  
A) glyoxysome  
B) vacuole  
C) mitochondrion  
D) Golgi apparatus  
E) peroxisome
- \_\_\_\_\_ 10) The chemical reactions involved in respiration are virtually identical between prokaryotic and eukaryotic cells. In eukaryotic cells, ATP is synthesized primarily on the inner membrane of the mitochondria. In light of the endosymbiont theory for the evolutionary origin of mitochondria, where is most ATP synthesis likely to occur in prokaryotic cells?  
A) in the cytoplasm  
B) on the inner mitochondrial membrane  
C) on the endoplasmic reticulum  
D) on the plasma membrane  
E) on the inner nuclear envelope
- \_\_\_\_\_ 11) One of the key innovations in the evolution of eukaryotes from a prokaryotic ancestor is the endomembrane system. What eukaryotic organelles or features might have evolved as a part of, or as an elaboration of, the endomembrane system?  
A) plasma membrane  
B) chloroplasts  
C) mitochondria  
D) nuclear envelope  
E) none of these
- \_\_\_\_\_ 12) Why isn't the mitochondrion classified as part of the endomembrane system?  
A) It is a static structure.  
B) Its structure is not derived from the ER or Golgi.  
C) It has too many vesicles.  
D) It is not involved in protein synthesis.  
E) It is not attached to the outer nuclear envelope.
- \_\_\_\_\_ 13) Movement of vesicles within the cell depends on what cellular structures?  
A) microtubules and motor proteins  
B) actin filaments and microtubules  
C) actin filaments and ribosomes  
D) centrioles and motor proteins  
E) actin filaments and motor proteins
- \_\_\_\_\_ 14) Vinblastine, a drug that inhibits microtubule polymerization, is used to treat some forms of cancer. Cancer cells given vinblastine would be unable to  
A) form cleavage furrows during cell division.  
B) migrate by amoeboid movement.  
C) separate chromosomes during cell division.  
D) extend pseudopods.  
E) maintain the shape of the nucleus.
- \_\_\_\_\_ 15) Which of the following statements about the cytoskeleton is true?  
A) The dynamic aspect of cytoskeletal function is made possible by the assembly and disassembly of a large variety of proteins into complex aggregates.  
B) Microfilaments are structurally rigid and resist compression, whereas microtubules resist tension (stretching).  
C) Movement of cilia and flagella is the result of motor proteins causing microtubules to move relative to each other.  
D) Chemicals that block the assembly of the cytoskeleton would cause little effect on the cell's response to external signals and stimuli.  
E) Transport vesicles among the membranes of the endomembrane system produce the cytoskeleton.
- \_\_\_\_\_ 16) Which of these statements about prokaryotes is correct?  
A) Bacterial cells conjugate to mutually exchange genetic material.  
B) Their genetic material is confined within vesicles known as plasmids.  
C) They divide by binary fission, without mitosis or meiosis.  
D) The persistence of bacteria throughout evolutionary time is due to their genetic homogeneity (in other words, sameness).  
E) Genetic variation in bacteria is not known to occur, because of their asexual mode of reproduction.