

NAME \_\_\_\_\_

DATE \_\_\_\_\_

**SPMD 201 – Human Anatomy for Sports Medicine**  
**Anatomy of Cells**  
Chapter 3

**Multiple Choice**

- \_\_\_\_\_1. The fluid-mosaic model of the plasma membrane suggests that:
- A. cholesterol forms the outermost layer of the membrane.
  - B. protein forms a “liquid” sea in the membrane.
  - C. phospholipids form a single lipid layer in the center of the membrane.
  - D. the membrane is neither rigid nor static in nature.
- \_\_\_\_\_2. Plasma membrane phospholipids:
- A. have polar tails.
  - B. form a bilayer.
  - C. have tails that face the exterior of the membrane.
  - D. are 95% cholesterol.
- \_\_\_\_\_3. Which of the following structures are found in the nucleus?
- A. cristae
  - B. cytosol
  - C. cisternae
  - D. chromosome
- \_\_\_\_\_4. The “control center” of the cell is the:
- A. nucleus.
  - B. ribosome.
  - C. mitochondrion.
  - D. plasma membrane.
- \_\_\_\_\_5. Nucleoli:
- A. are located in the cytosol.
  - B. produce ribosomal subunits.
  - C. have a distinct membrane.
  - D. are important for the formation of the Golgi apparatus.

- \_\_\_\_\_6. Absence of a cytoskeleton might effect:
- A. cell shape.
  - B. the number of channel proteins in the cell membrane.
  - C. the ability of the cell to generate energy.
  - D. vesicle formation.
- \_\_\_\_\_7. Cytoplasm is found:
- A. in the nucleus.
  - B. outside the nucleus but inside the plasma membrane.
  - C. in the cisternae of the endoplasmic reticulum.
  - D. on the cristae of the mitochondria.
- \_\_\_\_\_8. If you compare a cell with a manufacturing plant that exports goods, the cell's \_\_\_\_\_ could be compared to the manufacturing plant's shipping department.
- A. nucleus
  - B. lysosome
  - C. Golgi apparatus
  - D. endoplasmic reticulum
- \_\_\_\_\_9. Cells that lack ribosomes cannot:
- A. produce energy.
  - B. eliminate wastes.
  - C. engage in protein synthesis.
  - D. package cellular products.
- \_\_\_\_\_10. Organelles:
- A. are extracellular structures.
  - B. are unspecialized portions of a cell.
  - C. generally lack membranes.
  - D. vary in number and type depending on cell function.
- \_\_\_\_\_11. Endoplasmic reticulum with ribosomes attached to it is called:
- A. smooth ER.
  - B. dendritic ER.
  - C. nodular ER.
  - D. rough ER.

- \_\_\_\_\_12. A toxic drug destroyed the Golgi apparatus. This would affect:
- A. ribosomal RNA synthesis.
  - B. intracellular digestion.
  - C. packaging of glycoproteins and lipoproteins.
  - D. microtubule production.
- \_\_\_\_\_13. A cell's ability to replenish ATP is reduced by a metabolic poison. Which organelle is being affected?
- A. nucleus
  - B. centriole
  - C. microtubule
  - D. mitochondrion
- \_\_\_\_\_14. Microvilli:
- A. are extensions of the lysosomal membrane.
  - B. may be modified to function as sensory receptors.
  - C. are supported by microtubules.
  - D. move the cell.
- \_\_\_\_\_15. A cell with abundant peroxisomes would most likely be involved in:
- A. secretion.
  - B. storage of glycogen.
  - C. destruction of nonfunctional organelles.
  - D. cellular communication.

### **Alternate Choice**

1. Smooth / Rough (circle one) endoplasmic reticulum is the site of lipid production.
2. Membrane-bound sacs which contain enzymes to break down amino acids and fats, typically found in cells of the liver and kidneys, are called lysosomes / peroxisomes (circle one).
3. Cell inclusions, called organelles, are found in the cytoplasm / endoplasm (circle one).
4. The phospholipid head is hydrophilic / hydrophobic (circle one) and charged / uncharged (circle one).
5. DNA, which controls the structural and functional characteristics of the cell, is dispersed throughout the cytosol / nucleus (circle one).

6. Cilia / Microvilli (circle one) facilitate movement over the surface of the cell.
7. Cholesterol / Glycolipids (circle one) contribute(s) to the fluidity of the cell.
8. Substances *inside* the cell are referred to as intercellular / intracellular (circle one).

### Fill-In

1. Small structures inside (i.e., ribosomes, mitochondria, etc.) within the cell that perform specialized functions are called \_\_\_\_\_.
2. The major component of a cell that directs the activities of the cell is called the \_\_\_\_\_.
3. The \_\_\_\_\_ apparatus modifies, packages and distributes lipids and proteins produced by the cell.
4. The predominate lipid in the cell membrane is a \_\_\_\_\_.
5. The \_\_\_\_\_ contributes to the structure of the cell and permits cell movement.
6. Membrane-bound sacs containing hydrolytic enzymes that function as intracellular digestive systems are called \_\_\_\_\_.
7. The site of protein synthesis within the cell is the \_\_\_\_\_.
8. The site in the nucleus where ribosomes are formed is called the \_\_\_\_\_.

### Short Answer

1. To the best of your ability draw a two-dimensional representation of the “fluid mosaic model” of a cell membrane. Include and label the lipid bilayer, a plasma protein, and cholesterol.
2. Discuss the functions of proteins in the lipid bilayer of the plasma membrane.
3. Describe the major components of the cell, relating them to a manufacturing plant.
4. Explain what would happen to a cell in each of the following events:
  - a. a cell lost its nucleus
  - b. all of the lysosomes ruptured
  - c. the phospholipids in the cell membrane were dissolved
  - d. the cell began losing its mitochondria

5. Describe the relationship among ribosomes, endoplasmic reticulum, the Golgi apparatus, and exocytosis.

**Multiple Choice**

- |      |       |       |
|------|-------|-------|
| 1. D | 6. A  | 11. D |
| 2. B | 7. B  | 12. C |
| 3. D | 8. C  | 13. D |
| 4. A | 9. C  | 14. B |
| 5. B | 10. D | 15. C |

**Alternate Choice**

- |                         |                  |
|-------------------------|------------------|
| 1. Smooth               | 6. Cilia         |
| 2. peroxisomes          | 7. Cholesterol   |
| 3. cytoplasm            | 8. intracellular |
| 4. hydrophilic, charged |                  |
| 5. nucleus              |                  |

**Fill-In**

- |                 |                 |
|-----------------|-----------------|
| 1. Organelles   | 5. cytoskeleton |
| 2. nucleus      | 6. lysosomes    |
| 3. Golgi        | 7. ribosome     |
| 4. phospholipid | 8. nucleolus    |