

## Chapter 02 Cells, Tissues, Organs, and Organ Systems of Animals

### Multiple Choice Questions

1. The simplest organization of matter that exhibits the properties of life is the  
A. cell.  
B. tissue.  
C. protein.  
D. nucleic acid.  
E. organism.

*Blooms Level: 1. Remember*

*Learning Outcome: Describe, from the simplest to the most complex, the five levels of organization in a higher animal.*

*Section: 02.01*

*Topic: What Are Cells?*

2. Which of the following is part of plant cells but not animal cells?  
A. mitochondria  
B. endoplasmic reticulum  
C. plasma membrane  
D. cell wall  
E. nucleus

*Blooms Level: 1. Remember*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

3. Which of the following is found in animal cells, but is not usually found in plant cells?

- A. chromosomes
- B. Golgi apparatus
- C. mitochondria
- D. plasma membrane
- E. centrioles**

*Blooms Level: 1. Remember*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

4. A cell in which the DNA is not bound by a membrane is said to be

- A. prokaryotic.**
- B. organoid.
- C. eukaryotic.
- D. symbiotic.
- E. endosymbiotic.

*Blooms Level: 1. Remember*

*Learning Outcome: Differentiate between a prokaryotic and eukaryotic cell.*

*Section: 02.01*

*Topic: What Are Cells?*

5. A cell with a membrane-bound nucleus, containing DNA in organized structures called chromosomes is said to be

- A. symbiotic.
- B. eukaryotic.**
- C. organoid.
- D. prokaryotic.
- E. endosymbiotic.

*Blooms Level: 1. Remember*

*Learning Outcome: Differentiate between a prokaryotic and eukaryotic cell.*

*Section: 02.01*

*Topic: What Are Cells?*

6. A cell that has membrane-bound units called organelles and a cytoskeleton is said to be
- A. prokaryotic.
  - B. organoid.
  - C. eukaryotic.**
  - D. symbiotic.
  - E. endosymbiotic.

*Blooms Level: 1. Remember*

*Learning Outcome: Differentiate between a prokaryotic and eukaryotic cell.*

*Section: 02.01*

*Topic: What Are Cells?*

7. An organelle that is used for storage and internal transport, serves as a site for attachment of ribosomes, and makes steroids, is the
- A. cytoskeleton.
  - B. mitochondrion.
  - C. lysosome.
  - D. endoplasmic reticulum.**
  - E. centriole.

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

8. The organelle that packages and routes the synthesized products of a eukaryotic cell is the
- A. flagellum.
  - B. ribosome.
  - C. peroxisome.
  - D. nucleolus.
  - E. Golgi apparatus.**

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

9. These structures are an example of a microbody.

- A. ribosome
- B. vault
- C. peroxisome**
- D. golgi apparatus
- E. rough endoplasmic reticulum

*Blooms Level: 1. Remember*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

10. These structures have recently been shown to act as signal-receiving "antennae" for cells that help them monitor the extracellular environment.

- A. vacuoles
- B. mitochondria
- C. smooth endoplasmic reticulum
- D. cilia**
- E. rough endoplasmic reticulum

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

11. This organelle functions in cell division and organization of the cytoskeleton.

- A. mitochondrion
- B. centriole**
- C. endoplasmic reticulum
- D. chloroplast
- E. lysosome

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

12. The semifluid phase of the cytoplasm that contains organelles, vesicles, and inclusions, and serves as a medium for metabolic reactions is the

- A. nucleoplasm.
- B. cytoskeleton.
- C. cytosol.**
- D. peroxisome.
- E. plasma membrane.

*Blooms Level: 2. Understand*

*Learning Outcome: Describe the three parts of a eukaryotic cell.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

13. The \_\_\_\_\_ of the mitochondria function in increasing the inner membranous surface area.

- A. centrioles
- B. matrix
- C. strobili
- D. cristae**
- E. thylakoids

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

14. The surface to volume ratio of a cell limits

- A. the type of organelles present.
- B. the organelle/microtubule volume.
- C. the number of organelles present.
- D. the plasma membrane/DNA volume.
- E. the size a cell may reach.**

*Blooms Level: 2. Understand*

*Learning Outcome: Explain why most cells are small.*

*Section: 02.03*

*Topic: Why Are Most Cells Small?*

15. As the radius of a cell increases, the surface area \_\_\_\_\_ and the ratio of surface area to volume \_\_\_\_\_.

- A. decreases; increases
- B. increases; decreases**
- C. decreases; remains the same
- D. increases; remains the same
- E. remains the same; increases

*Blooms Level: 2. Understand*

*Learning Outcome: Explain why most cells are small.*

*Section: 02.03*

*Topic: Why Are Most Cells Small?*

16. The fluid mosaic model of membrane structure was developed by

- A. Singer and Nicolson.**
- B. Garth and Richardson.
- C. Schleiden and Schwann.
- D. Singer and Schleiden.
- E. Johnson and Garth.

*Blooms Level: 1. Remember*

*Learning Outcome: Relate the structure of the plasma membrane to the function of the membrane.*

*Section: 02.03*

*Topic: Cell Membranes*

17. Membrane proteins attached to the inner or outer surfaces of plasma membranes are called \_\_\_\_\_ proteins.

- A. intrinsic
- B. hydrophobic
- C. peripheral**
- D. hydrophilic
- E. mosaic

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the plasma membrane to the function of the membrane.*

*Section: 02.03*

*Topic: Cell Membranes*

18. Membrane proteins that are embedded within the membrane and may function in moving materials across the membrane are called \_\_\_\_\_ proteins.

- A. hydrophobic
- B. extrinsic
- C. mosaic
- D. intrinsic**
- E. hydrophilic

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the plasma membrane to the function of the membrane.*

*Section: 02.03*

*Topic: Cell Membranes*

19. The "cell coat," made of surface carbohydrates and portions of proteins, is called the

- A. tunic.
- B. cell wall.
- C. plasma membrane.
- D. desmosome.
- E. glycocalyx.**

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the plasma membrane to the function of the membrane.*

*Section: 02.03*

*Topic: Cell Membranes*

20. The ability of a membrane to regulate passage of materials into and out of a cell is called

- A. selective permeability.**
- B. innate regulation.
- C. active transport.
- D. membrane uniformity.
- E. homeostasis.

*Blooms Level: 2. Understand*

*Learning Outcome: Differentiate the different processes by which material can move into and out of the cell through the plasma membrane.*

*Section: 02.04*

*Topic: Movement across Membranes*

21. Water molecules move through selectively permeable membranes from areas of high concentration of water to areas of lower concentration by

- A. simple diffusion.
- B. endocytosis.
- C. osmosis.**
- D. facilitated diffusion.
- E. hydrostatic infusion.

*Blooms Level: 2. Understand*

*Learning Outcome: Explain the movement of water by osmosis.*

*Section: 02.04*

*Topic: Movement across Membranes*

22. When molecules bind temporarily with a carrier protein in a cell's membrane and move across the membrane from areas of higher concentration to areas of lower concentration this is known as

- A. simple diffusion.
- B. endocytosis.
- C. receptor-mediated osmosis.
- D. active transport.
- E. facilitated diffusion.**

*Blooms Level: 2. Understand*

*Learning Outcome: Differentiate the different processes by which material can move into and out of the cell through the plasma membrane.*

*Section: 02.04*

*Topic: Movement across Membranes*

23. The form of transport involved when blood pressure forces water and small dissolved molecules into kidney tubules is

- A. osmosis.
- B. simple diffusion.
- C. complex diffusion.
- D. filtration.**
- E. facilitated diffusion.

*Blooms Level: 2. Understand*

*Learning Outcome: Differentiate the different processes by which material can move into and out of the cell through the plasma membrane.*

*Section: 02.04*

*Topic: Movement across Membranes*



24. Cells placed in this type of solution will shrivel.

- A. isotonic
- B. water
- C. hypertonic**
- D. hypotonic
- E. metatonic

*Blooms Level: 2. Understand*

*Learning Outcome: Explain the movement of water by osmosis.*

*Section: 02.04*

*Topic: Movement across Membranes*

25. Active transport

- A. can only move molecules from higher to lower concentrations.
- B. uses cellular energy to move molecules from lower to higher concentrations.**
- C. moves molecules through protein channels by binding them to large lipid molecules.
- D. can only move protein molecules.
- E. can only move carbohydrate molecules.

*Blooms Level: 2. Understand*

*Learning Outcome: Differentiate the different processes by which material can move into and out of the cell through the plasma membrane.*

*Section: 02.04*

*Topic: Movement across Membranes*

26. This carrier protein transports two molecules or ions in opposite directions.

- A. Uniporter
- B. Symporter
- C. Antiporter**
- D. Cotransporter
- E. Proporter

*Blooms Level: 2. Understand*

*Learning Outcome: Differentiate the different processes by which material can move into and out of the cell through the plasma membrane.*

*Section: 02.04*

*Topic: Movement across Membranes*

27. Small hydrophilic molecules such as \_\_\_\_\_ are sometimes able to enter a cell through an aquaporin.

- A. glycerol
- B. cholesterol
- C. glucose
- D. beta carotene
- E. vitamin D

*Blooms Level: 2. Understand*

*Learning Outcome: Explain the movement of water by osmosis.*

*Section: 02.04*

*Topic: Movement across Membranes*

28. When a plasma membrane encloses small fluid droplets and takes them into the cell, a form of transport known as \_\_\_\_\_ occurs.

- A. active diffusion
- B. receptor-mediated exocytosis
- C. pinocytosis
- D. facilitated diffusion
- E. phagocytosis

*Blooms Level: 2. Understand*

*Learning Outcome: Differentiate the different processes by which material can move into and out of the cell through the plasma membrane.*

*Section: 02.04*

*Topic: Movement across Membranes*

29. When cells such as white blood cells of a vertebrate engulf bacteria, the membrane transport mechanism used is

- A. receptor-mediated endocytosis.
- B. active transport.
- C. passive transport.
- D. phagocytosis.
- E. exocytosis.

*Blooms Level: 2. Understand*

*Learning Outcome: Differentiate the different processes by which material can move into and out of the cell through the plasma membrane.*

*Section: 02.04*

*Topic: Movement across Membranes*

30. Two important and well-known active transport mechanisms in nerve cells are the \_\_\_\_\_ pumps.

- A. sodium-phosphorus and calcium
- B. calcium and sulfur
- C. oxygen and carbon dioxide
- D. protein and nucleic acid
- E. calcium and sodium-potassium**

*Blooms Level: 2. Understand*

*Learning Outcome: Differentiate the different processes by which material can move into and out of the cell through the plasma membrane.*

*Section: 02.04*

*Topic: Movement across Membranes*

31. The protein composing the filaments inside cilia and flagella is

- A. tubulin.**
- B. actin.
- C. myosin.
- D. mucin.
- E. collagen.

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

32. Structures associated with the endoplasmic reticulum, necessary for protein synthesis are the

- A. desmosomes.
- B. ribosomes.**
- C. peroxisomes.
- D. chromosomes.
- E. nucleosomes.

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

33. The organelle that is especially prominent and well-developed in secretory cells (such as glandular epithelial cells) is the

- A. centriole.
- B. phagolysosome.
- C. Golgi apparatus.**
- D. mitochondrion.
- E. peroxisome.

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

34. The structures which are elongated appendages used for propelling the cell or for moving material over the cell surface are the

- A. cilia and flagella.**
- B. axonemes and myonemes.
- C. basal bodies and centrioles.
- D. microtubules and microfilaments.
- E. axopodia and myopodia.

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

35. A major function of the cell nucleus is

- A. storing proteins.
- B. storing genetic information.**
- C. packaging materials for secretion.
- D. packaging ATP for cellular use.
- E. serving as a site for protein synthesis.

*Blooms Level: 2. Understand*

*Learning Outcome: Categorize the functions of the nucleus in terms of structure of the nucleus.*

*Section: 02.06*

*Topic: The nucleus: Information center*

36. The nuclear envelope is continuous with the \_\_\_\_\_ at a number of points.

- A. plasma membrane
- B. Golgi apparatus
- C. endoplasmic reticulum**
- D. mitochondria
- E. cytoskeleton

*Blooms Level: 2. Understand*

*Learning Outcome: Categorize the functions of the nucleus in terms of structure of the nucleus.*

*Section: 02.06*

*Topic: The nucleus: Information center*

37. The \_\_\_\_\_ is an organelle inside the nucleus that serves as the pre-assembly point for ribosomes.

- A. nucleosome
- B. nucleotide
- C. nucleoplasm
- D. nucleolus**
- E. nucleoside

*Blooms Level: 2. Understand*

*Learning Outcome: Categorize the functions of the nucleus in terms of structure of the nucleus.*

*Section: 02.06*

*Topic: The nucleus: Information center*

38. \_\_\_\_\_ are newly discovered organelles believed to aid in transport of messenger RNA into the cytoplasm of eukaryotic cells.

- A. Vaults**
- B. Ribosomes
- C. Peroxisomes
- D. Nucleoli
- E. Centrioles

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

39. Which of the following is not an example of an organ system?

- A. digestive
- B. lymphatic
- C. respiratory
- D. nervous
- E.** blood

*Blooms Level: 2. Understand*

*Learning Outcome: Describe an organ as found in a mammal.*

*Section: 02.10*

40. The type of tissue that covers or lines structures is

- A.** epithelial tissue.
- B. fibrous tissue.
- C. adipose tissue.
- D. contractile tissue.
- E. skeletal tissue.

*Blooms Level: 2. Understand*

*Learning Outcome: Explain the structure and function of different epithelia.*

*Section: 02.08*

*Topic: Tissues*

41. Spaces within bone or cartilage which house the living cells are called

- A. chondrocytes.
- B.** lacunae.
- C. osteoclasts.
- D. intercalations.
- E. cristae.

*Blooms Level: 1. Remember*

*Learning Outcome: Identify the different types of connective tissue.*

*Section: 02.08*

*Topic: Tissues*

Chapter 02 - Cells, Tissues, Organs, and Organ Systems of Animals

42. Fibrous connective tissue in the form of \_\_\_\_\_ connects bones to bones.

- A.** ligaments
- B. fascia
- C. tendons
- D. adipose tissue
- E. hyaline cartilage

*Learning Outcome: Identify the different types of connective tissue.*

*Section: 02.08*

*Topic: Tissues*

43. Blood is considered to be a/an \_\_\_\_\_ tissue.

- A. epithelial
- B. liquid
- C. hyaline
- D.** connective
- E. adipose

*Blooms Level: 2. Understand*

*Learning Outcome: Identify the different types of connective tissue.*

*Section: 02.08*

*Topic: Tissues*

44. Heart, lungs, and liver are examples of functional units called

- A. tissues.
- B. organelles.
- C. systems.
- D. histological entities.
- E.** organs.

*Blooms Level: 1. Remember*

*Learning Outcome: Describe an organ as found in a mammal.*

*Section: 02.08*

*Topic: Tissues*

45. Two organelles called \_\_\_\_\_ lie at right angles to each other near the nucleus and are involved with movement of the chromosomes during cell division.

- A. centrioles
- B. centrosomes
- C. centromeres
- D. concentricyclones
- E. cycloses

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

46. \_\_\_\_\_ transport molecules made in the nucleus to various parts of the cell.

- A. Centrioles
- B. Barrels
- C. Vaults
- D. Autosomes
- E. Motorists

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*

47. There are three types of muscle tissue, yet they all share one common feature. Of the following, which describes this feature?

- A. The cells in muscle tissue can shorten and accomplish movement.
- B. Muscle tissue is attached to the skeleton of the body.
- C. Muscle tissue is striated.
- D. The cells in muscle tissue all have a centrally located nucleus.

*Blooms Level: 2. Understand*

*Learning Outcome: Identify a unique feature of muscle cells.*

*Section: 02.08*

*Topic: Tissues*



### True / False Questions

48. The basic function of neurons is to conduct a nerve impulse.

**TRUE**

*Blooms Level: 2. Understand*

*Learning Outcome: Describe the basic function of neurons.*

*Section: 02.08*

*Topic: Tissues*

### Multiple Choice Questions

49. Which of the following are functions of exosomes?

A. Contain cell-specific payloads of proteins.

B. May alter cellular functions.

C. Secreted by most types of cells.

D. Both A and B.

**E.** A, B and C.

*Blooms Level: 2. Understand*

*Learning Outcome: Relate the structure of the major cellular organelles to their function.*

*Section: 02.05*

*Topic: Cytoplasm, Organelles, and Cellular Components*