

Multiple Choice Questions

1. Which part of the cell is responsible for controlling its activities?
A) Mitochondria
B) Ribosomes
C) Nucleus
D) Golgi apparatus
2. What is the function of the plasma membrane?
A) Produces energy
B) Regulates what enters and exits the cell
C) Synthesizes proteins
D) Stores genetic material
3. Which organelle is known as the "powerhouse of the cell"?
A) Ribosome
B) Mitochondria
C) Lysosome
D) Endoplasmic reticulum
4. What is the primary function of ribosomes?
A) Transport molecules
B) Store genetic material
C) Synthesize proteins
D) Digest cellular waste
5. Which organelle is responsible for packaging and shipping proteins?
A) Lysosome
B) Nucleus
C) Golgi apparatus
D) Cytoskeleton
6. What is the jelly-like substance inside the cell where organelles are suspended?
A) Cytoplasm
B) Cytosol
C) Plasma membrane
D) Nucleoplasm
7. What type of cells lack a nucleus?
A) Eukaryotic cells
B) Animal cells
C) Plant cells
D) Prokaryotic cells
8. What is the primary function of lysosomes?
A) Produce energy for the cell
B) Digest unwanted materials
C) Synthesize proteins
D) Store genetic information
9. What structure provides support and shape to plant cells?
A) Plasma membrane
B) Cytoskeleton
C) Cell wall
D) Chloroplast
10. Where does photosynthesis occur in plant cells?
A) Mitochondria
B) Ribosomes
C) Nucleus
D) Chloroplasts
11. Which organelle processes and transports lipids and proteins within the cell?
A) Golgi apparatus
B) Endoplasmic reticulum (ER)
C) Lysosome
D) Ribosome
12. What is the function of the nucleolus?
A) Store genetic material
B) Assemble ribosome subunits
C) Transport molecules out of the nucleus
D) Regulate cell division
13. Which component serves as a selective barrier for cells?
A) Cytoplasm
B) Nucleus
C) Plasma membrane
D) Ribosome
14. What is unique about mitochondria compared to other organelles?
A) They lack a membrane.
B) They contain their own DNA.
C) They are only found in plants.
15. Which organelle is involved in the breakdown of cellular waste and foreign substances?
A) Mitochondria
B) Ribosomes
C) Lysosomes
D) Golgi apparatus
16. What is the primary function of the cytoskeleton?
A) To synthesize proteins
B) To store genetic material
C) To provide structural support and shape to the cell
D) To produce energy for the cell
17. Which organelle is responsible for storing genetic information?
A) Mitochondria
B) Ribosomes
C) Nucleus
D) Golgi apparatus

18. What is the function of the centrioles?
A) To synthesize proteins
B) To produce energy for the cell
C) To form cilia, flagella, and spindle fibers
D) To store genetic material

19. Which organelle is involved in protein synthesis and transport?
A) Golgi apparatus
B) Endoplasmic reticulum (ER)
C) Lysosome
D) Mitochondria

20. What is the function of peroxisomes?
A) To synthesize proteins
B) To produce energy for the cell
C) To break down fatty acids and amino acids
D) To store genetic material

True/False Questions

1. **True or False:** All cells have a cell wall.
 - o **Suggestion:** Only plant, bacterial, and some fungal cells have a cell wall.
2. **True or False:** Mitochondria are found in all types of cells.
 - o **Suggestion:** Mitochondria are present in eukaryotic cells, which include most living organisms except prokaryotes.
3. **True or False:** The nucleus is the site of protein synthesis.
 - o **Suggestion:** Protein synthesis occurs on ribosomes, not in the nucleus.
4. **True or False:** Lysosomes are involved in cellular digestion.
 - o **Suggestion:** Lysosomes contain digestive enzymes that break down cellular waste and foreign substances.
5. **True or False:** Chloroplasts are found in animal cells.
 - o **Suggestion:** Chloroplasts are found in plant cells and some algae, where they perform photosynthesis.
6. **True or False:** The plasma membrane is permeable to all substances.
 - o **Suggestion:** The plasma membrane is selectively permeable, controlling what enters and leaves the cell.
7. **True or False:** All eukaryotic cells have a Golgi apparatus.
 - o **Suggestion:** The Golgi apparatus is involved in protein modification and packaging in eukaryotic cells.
8. **True or False:** Prokaryotic cells have a nucleus.
 - o **Suggestion:** Prokaryotic cells lack a true nucleus and other membrane-bound organelles.
9. **True or False:** The cytoskeleton provides structural support to the cell.
 - o **Suggestion:** The cytoskeleton helps maintain cell shape and provides mechanical support.
10. **True or False:** Endoplasmic reticulum is involved in protein synthesis.
 - o **Suggestion:** The rough endoplasmic reticulum has ribosomes attached and is involved in protein synthesis.
11. **True or False:** Peroxisomes are involved in the breakdown of fatty acids.
 - o **Suggestion:** Peroxisomes contain enzymes that oxidize certain molecules, including fatty acids.
12. **True or False:** Centrioles are involved in forming cilia and flagella.
 - o **Suggestion:** Centrioles are also involved in forming spindle fibers during cell division.
13. **True or False:** The nucleolus is responsible for ribosome assembly.
 - o **Suggestion:** The nucleolus is a region within the nucleus where ribosome subunits are assembled.

14. **True or False:** All cells have chloroplasts.

○ **Suggestion:** Chloroplasts are found in plant cells and some algae, where they perform photosynthesis.

15. **True or False:** The cell wall provides structural support to plant cells.

○ **Suggestion:** The cell wall is composed of cellulose and provides rigidity and support to plant cells.

Short Answer Questions

1. **Describe the primary function of the nucleus in a cell.**

Answer: The nucleus is the control center of a cell, containing most of the cell's genetic material in the form of DNA. It regulates cell growth, metabolism, and reproduction by controlling gene expression.

2. **Explain the role of mitochondria in cellular respiration.**

Answer: Mitochondria are the "powerhouses" of the cell, responsible for generating most of the cell's supply of adenosine triphosphate (ATP), which is used as a source of chemical energy. They achieve this through the process of cellular respiration.

3. **Discuss the function of the plasma membrane.**

Answer: The plasma membrane, also known as the cell membrane, is a thin layer that acts as a barrier between the inside of the cell and its external environment. It regulates what enters and leaves the cell, maintaining cellular homeostasis.

4. **Describe the structure and function of ribosomes.**

Answer: Ribosomes are small organelles found throughout the cytoplasm, attached to the endoplasmic reticulum or floating free. They are responsible for protein synthesis, translating mRNA into specific sequences of amino acids that fold into proteins.

5. **Explain the role of lysosomes in cellular digestion.**

Answer: Lysosomes are membrane-bound organelles containing digestive enzymes. They break down and recycle cellular waste and foreign substances, helping maintain cellular cleanliness and recycling nutrients.

Fill-in-the-Blank Questions

1. The _____ is the control center of a cell where genetic information is stored.

Answer:

2. _____ are the organelles responsible for generating most of the cell's energy through cellular respiration.

Answer:

3. The _____ acts as a selective barrier controlling the movement of substances in and out of the cell.

Answer: plasma membrane

4. _____ are small organelles found throughout the cytoplasm where protein synthesis occurs.

Answer:

5. _____ are membrane-bound organelles that contain digestive enzymes to break down cellular waste.

Answer:

6. The _____ is a network of membranous tubules and flattened sacs involved in protein synthesis and transport.

Answer:

7. The _____ is a complex network of filaments that provides structural support and shape to the cell.

Answer:

8. _____ are organelles found in plant cells responsible for photosynthesis.

Answer:

9. The _____ is a region within the nucleus where ribosome subunits are assembled.

Answer:

10. _____ are organelles involved in the breakdown of fatty acids and amino acids.

Answer:

These questions are designed to reinforce understanding and encourage critical thinking about cell structure.