

## Cells And Cell Organelles Worksheet Questions and Answers PDF

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### Part 1: Building a Foundation

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**What is the basic structural and functional unit of all living organisms?**

*Hint: Think about the smallest unit that can perform life functions.*

- A) Tissue
- B) Organ
- C) Cell ✓
- D) Organism

■ The basic structural and functional unit of all living organisms is the cell.

**Which of the following are characteristics of eukaryotic cells? (Select all that apply)**

*Hint: Consider the features that distinguish eukaryotic cells from prokaryotic cells.*

- A) Lack of nucleus
- B) Presence of membrane-bound organelles ✓
- C) Presence of a distinct nucleus ✓
- D) Smaller than prokaryotic cells

■ Eukaryotic cells have a distinct nucleus and membrane-bound organelles.

**Describe the main function of the cell membrane.**

*Hint: Think about the role of the cell membrane in protecting and regulating the cell.*

**The cell membrane regulates what enters and exits the cell and provides protection.**

**List two differences between plant cells and animal cells.**

*Hint: Consider the structures that are unique to each type of cell.*

1. Difference 1

**Plant cells have a cell wall.**

2. Difference 2

**Plant cells have chloroplasts.**

**Plant cells have a cell wall and chloroplasts, while animal cells do not.**

## Part 2: Comprehension and Application

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**Which organelle is known as the powerhouse of the cell?**

*Hint: Think about which organelle is responsible for energy production.*

- A) Ribosome
- B) Golgi Apparatus
- C) Mitochondria ✓
- D) Lysosome

■ The mitochondria are known as the powerhouse of the cell because they produce ATP.

**What are the functions of the smooth endoplasmic reticulum? (Select all that apply)**

*Hint: Consider the roles of the smooth endoplasmic reticulum in the cell.*

- A) Protein synthesis
- B) Lipid synthesis ✓
- C) Detoxification processes ✓
- D) Photosynthesis

■ The smooth endoplasmic reticulum is involved in lipid synthesis and detoxification processes.

**If a cell is placed in a hypertonic solution, what is likely to happen to the cell?**

*Hint: Think about the movement of water in relation to solute concentration.*

- A) It will swell
- B) It will shrink ✓
- C) It will remain the same
- D) It will burst

■ If a cell is placed in a hypertonic solution, it will likely shrink due to water moving out.

**Describe a real-world scenario where the process of osmosis is critical for cell function.**

*Hint: Think about how cells interact with their environment.*

■ Osmosis is critical in processes like nutrient absorption in the intestines.

### Part 3: Analysis, Evaluation, and Creation

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**Which of the following correctly describes the relationship between the nucleus and ribosomes?**

*Hint: Consider how ribosomes are produced and where they are located.*

- A) Ribosomes are found inside the nucleus
- B) The nucleus directs ribosome production ✓
- C) Ribosomes produce the nucleus
- D) The nucleus and ribosomes are unrelated

■ The nucleus directs ribosome production, which occurs in the nucleolus.

**Analyze the roles of the Golgi apparatus and lysosomes in protein processing and transport. Which statements are true? (Select all that apply)**

*Hint: Think about how proteins are modified and transported within the cell.*

- A) The Golgi apparatus modifies proteins before they are transported ✓
- B) Lysosomes digest proteins for energy
- C) The Golgi apparatus packages proteins into vesicles ✓
- D) Lysosomes are involved in protein synthesis

■ The Golgi apparatus modifies and packages proteins, while lysosomes digest proteins.

**Which of the following scenarios would most likely disrupt cellular homeostasis?**

*Hint: Consider the effects of cellular processes on overall cell stability.*

- A) Increased production of ATP
- B) Loss of lysosomal function ✓
- C) Enhanced protein synthesis
- D) Improved cell membrane integrity

■ Loss of lysosomal function would disrupt cellular homeostasis by affecting waste processing.

**Design an experiment to test the effects of temperature on enzyme activity within lysosomes. Describe your hypothesis, method, and expected results.**

*Hint: Think about how temperature might affect enzyme function.*

**The experiment should outline how temperature affects enzyme activity, with expected results based on enzyme kinetics.**