

## Cell Organelle Worksheet

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### Part 1: Building a Foundation

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

*Hint: Think about where energy is produced in the cell.*

- A) Nucleus
- B) Mitochondria
- C) Golgi Apparatus
- D) Ribosome

**Which of the following are functions of the endoplasmic reticulum?**

*Hint: Consider the roles of the rough and smooth ER.*

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

**Describe the role of the nucleus in a eukaryotic cell.**

*Hint: Think about the nucleus as the control center of the cell.*

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

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

1. Difference 1

2. Difference 2

**What is the primary function of ribosomes?**

*Hint: Think about what ribosomes are known for in the cell.*

- A) Energy production
- B) Protein synthesis
- C) Lipid storage
- D) DNA replication

## Part 2: Understanding and Application

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**Which organelle is directly involved in the modification and packaging of proteins?**

*Hint: Consider the organelle that is often referred to as the post office of the cell.*

- A) Lysosome
- B) Golgi Apparatus
- C) Chloroplast
- D) Smooth ER

**Which of the following statements about chloroplasts are true?**

*Hint: Think about the functions and characteristics of chloroplasts.*

- A) They are found in animal cells.
- B) They contain chlorophyll.
- C) They are the site of photosynthesis.
- D) They produce ATP through cellular respiration.

**Explain how the cell membrane maintains homeostasis within the cell.**

*Hint: Consider the role of the cell membrane in regulating what enters and exits the cell.*

**If a cell is unable to produce ATP, which organelle is most likely malfunctionING?**

*Hint: Think about the organelle responsible for energy production.*

- A) Nucleus
- B) Mitochondria
- C) Golgi Apparatus
- D) Ribosome

**A scientist discovers a new type of cell that contains a cell wall, chloroplasts, and a large central vacuole. Which of the following can be inferred about this cell?**

*Hint: Consider the characteristics of plant cells.*

- A) It is a plant cell.
- B) It is an animal cell.
- C) It performs photosynthesis.
- D) It lacks a nucleus.

**Describe how the structure of the cell membrane facilitates its function in selective permeability.**

*Hint: Think about the components of the cell membrane and their roles.*

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

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**Which organelle would be most affected if a cell is unable to detoxify harmful substances?**

*Hint: Consider the organelle involved in detoxification processes.*

- A) Rough ER
- B) Smooth ER
- C) Lysosome
- D) Peroxisome

**Analyze the relationship between the nucleus and ribosomes in protein synthesis. Which statements are correct?**

*Hint: Think about how genetic information is used in protein synthesis.*

- A) The nucleus directs ribosome function.
- B) Ribosomes are located inside the nucleus.
- C) Ribosomes translate genetic information from the nucleus.
- D) The nucleus provides energy for ribosomes.

**Compare and contrast the roles of lysosomes and peroxisomes in cellular metabolism.**

*Hint: Consider the functions of each organelle in breaking down substances.*

**Which of the following scenarios would most likely result in a cell bursting?**

*Hint: Think about the effects of osmosis on cells.*

- A) Excess water intake by osmosis
- B) Loss of mitochondria
- C) Increased protein synthesis
- D) Decreased lipid production

**Evaluate the impact of a non-functional Golgi apparatus on a cell. Which outcomes are likely?**

*Hint: Consider the role of the Golgi apparatus in processing proteins.*

- A) Accumulation of proteins in the ER
- B) Increased energy production
- C) Disruption in protein sorting
- D) Enhanced lipid synthesis

**Design an experiment to test the effect of temperature on the rate of photosynthesis in chloroplasts. Include your hypothesis, variables, and a brief description of the method.**

*Hint: Think about how you would set up an experiment to measure photosynthesis.*