

# Cell Organelle Worksheet Answer Key PDF

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## Part 1: Building a Foundation

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

undefined. A) Nucleus

**undefined. B) Mitochondria ✓**

undefined. C) Golgi Apparatus

undefined. D) Ribosome

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

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

**undefined. A) Protein synthesis ✓**

**undefined. B) Lipid synthesis ✓**

undefined. C) Photosynthesis

**undefined. D) Detoxification ✓**

The endoplasmic reticulum is involved in protein synthesis, lipid synthesis, and detoxification.

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

**The nucleus houses the cell's genetic material and regulates gene expression.**

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

1. Difference 1

**Plant cells have a cell wall.**

2. Difference 2

**Animal cells have lysosomes.**

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

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

undefined. A) Energy production

**undefined. B) Protein synthesis ✓**

undefined. C) Lipid storage

undefined. D) DNA replication

Ribosomes are primarily responsible for protein synthesis.

## Part 2: Understanding and Application

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

undefined. A) Lysosome

**undefined. B) Golgi Apparatus ✓**

undefined. C) Chloroplast

undefined. D) Smooth ER

The Golgi apparatus is responsible for modifying and packaging proteins.

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

undefined. A) They are found in animal cells.

**undefined. B) They contain chlorophyll. ✓**

**undefined. C) They are the site of photosynthesis. ✓**

undefined. D) They produce ATP through cellular respiration.

Chloroplasts contain chlorophyll and are the site of photosynthesis.

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

**The cell membrane maintains homeostasis by controlling the movement of substances in and out of the cell.**

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

undefined. A) Nucleus

**undefined. B) Mitochondria ✓**

undefined. C) Golgi Apparatus

undefined. D) Ribosome

The mitochondria are responsible for ATP production, so if ATP production fails, mitochondria are likely malfunctionING.

**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?**

**undefined. A) It is a plant cell. ✓**

undefined. B) It is an animal cell.

**undefined. C) It performs photosynthesis. ✓**

undefined. D) It lacks a nucleus.

The presence of a cell wall, chloroplasts, and a large central vacuole suggests that this cell is a plant cell.

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

**The cell membrane's phospholipid bilayer structure allows it to be selectively permeable, controlling what enters and exits the cell.**

### **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?**

undefined. A) Rough ER

**undefined. B) Smooth ER ✓**

undefined. C) Lysosome

undefined. D) Peroxisome

The smooth endoplasmic reticulum (Smooth ER) is primarily involved in detoxification.

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

**undefined. A) The nucleus directs ribosome function. ✓**

undefined. B) Ribosomes are located inside the nucleus.

**undefined. C) Ribosomes translate genetic information from the nucleus. ✓**

undefined. D) The nucleus provides energy for ribosomes.

The nucleus directs ribosome function and provides the genetic information needed for protein synthesis.

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

**Lysosomes are involved in breaking down waste and cellular debris, while peroxisomes are involved in lipid metabolism and detoxification.**

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

**undefined. A) Excess water intake by osmosis ✓**

undefined. B) Loss of mitochondria

undefined. C) Increased protein synthesis

undefined. D) Decreased lipid production

Excess water intake by osmosis can lead to cell bursting due to increased internal pressure.

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

**undefined. A) Accumulation of proteins in the ER ✓**

undefined. B) Increased energy production

**undefined. C) Disruption in protein sorting ✓**

undefined. D) Enhanced lipid synthesis

A non-functional Golgi apparatus would likely lead to accumulation of proteins in the ER and disruption in protein sorting.

**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.**

**The experiment should include a hypothesis about temperature's effect on photosynthesis, independent and dependent variables, and a clear method for measuring the rate of photosynthesis.**