

Functions Of Cell Organelles Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

Which organelle is known as the powerhouse of the cell?

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

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

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

Which of the following organelles are involved in protein synthesis? (Select all that apply)

Hint: Consider the organelles that are directly related to making proteins.

- A) Ribosomes ✓
- B) Smooth Endoplasmic Reticulum ✓
- C) Rough Endoplasmic Reticulum ✓
- D) Golgi Apparatus

■ Ribosomes, Rough Endoplasmic Reticulum, and Smooth Endoplasmic Reticulum are involved in protein synthesis.

Explain the primary function of the nucleus in a cell.

Hint: Consider the role of the nucleus in genetic information.

The nucleus stores the cell's genetic material and coordinates activities such as growth, metabolism, and reproduction.

List the two main types of Endoplasmic Reticulum and their primary functions.

Hint: Think about the differences between the two types of ER.

1. What is the first type of Endoplasmic Reticulum?

Rough Endoplasmic Reticulum

2. What is the primary function of Rough Endoplasmic Reticulum?

Protein synthesis

3. What is the second type of Endoplasmic Reticulum?

Smooth Endoplasmic Reticulum

4. What is the primary function of Smooth Endoplasmic Reticulum?

Lipid synthesis and detoxification

The two main types of Endoplasmic Reticulum are Rough ER, which synthesizes proteins, and Smooth ER, which synthesizes lipids and detoxifies substances.

What is the primary function of lysosomes?

Hint: Consider what lysosomes do with waste materials.

- A) Energy production
- B) Protein synthesis
- C) Digestion of macromolecules ✓
- D) Photosynthesis

Lysosomes are primarily responsible for the digestion of macromolecules and waste materials.

Part 2: Understanding and Interpretation

Which organelle is primarily responsible for modifying and packaging proteins?

Hint: Think about the organelle that processes proteins after they are made.

- A) Nucleus
- B) Golgi Apparatus ✓
- C) Lysosome
- D) Chloroplast

The Golgi Apparatus is responsible for modifying and packaging proteins.

Which of the following statements about chloroplasts are true? (Select all that apply)

Hint: Consider the functions and characteristics of chloroplasts.

- A) They are found in animal cells.
- B) They contain chlorophyll. ✓
- C) They conduct photosynthesis. ✓
- D) They have their own DNA. ✓

Chloroplasts contain chlorophyll, conduct photosynthesis, and have their own DNA, but they are not found in animal cells.

Describe how the structure of the cell membrane contributes to its function as a selective barrier.

Hint: Think about the components of the cell membrane.

The cell membrane's structure, including its phospholipid bilayer and embedded proteins, allows it to selectively control the movement of substances in and out of the cell.

Part 3: Application and Analysis

A cell needs to detoxify a large amount of alcohol. Which organelle would be most active in this process?

Hint: Consider which organelle is involved in detoxification.

- A) Lysosome
- B) Smooth Endoplasmic Reticulum ✓
- C) Mitochondria
- D) Ribosome

The Smooth Endoplasmic Reticulum would be most active in detoxifying alcohol.

In a plant cell, which organelles work together to maintain turgor pressure? (Select all that apply)

Hint: Think about the structures that provide support and pressure in plant cells.

- A) Cell Wall ✓
- B) Vacuole ✓
- C) Chloroplast
- D) Nucleus

The Cell Wall and Vacuole work together to maintain turgor pressure in plant cells.

Predict what might happen to a cell if its mitochondria were not functioning properly.

Hint: Consider the role of mitochondria in energy production.

If mitochondria are not functioning properly, the cell may not produce enough energy, leading to cell dysfunction or death.

Which of the following best explains the relationship between the Rough ER and the Golgi Apparatus?

Hint: Think about the processes that occur between these two organelles.

- A) The Rough ER packages proteins for the Golgi Apparatus.
- B) The Golgi Apparatus synthesizes proteins for the Rough ER.
- C) The Rough ER synthesizes proteins that are modified by the Golgi Apparatus. ✓
- D) The Golgi Apparatus and Rough ER both detoxify poisons.

The Rough ER synthesizes proteins that are modified by the Golgi Apparatus.

Analyze the following scenarios and identify which organelles are directly involved in protein transport within a cell. (Select all that apply)

Hint: Consider the organelles that play a role in moving proteins.

- A) Ribosomes ✓
- B) Rough Endoplasmic Reticulum ✓
- C) Golgi Apparatus ✓
- D) Lysosomes

Ribosomes, Rough Endoplasmic Reticulum, and Golgi Apparatus are directly involved in protein transport.

Analyze how the absence of a cell wall would affect a plant cell's ability to maintain its structure.

Hint: Consider the role of the cell wall in plant cells.

Without a cell wall, a plant cell would struggle to maintain its shape and structural integrity, leading to potential collapse.

Part 4: Evaluation and Creation

If a cell's lysosomes burst, what would be the most likely outcome?

Hint: Think about the function of lysosomes in the cell.

- A) Increased energy production
- B) Cell digestion and death ✓
- C) Enhanced protein synthesis
- D) Improved detoxification

If lysosomes burst, it would likely lead to cell digestion and death due to the release of digestive enzymes.

Evaluate the following statements and identify which are potential consequences of a malfunctionING Golgi Apparatus. (Select all that apply)

Hint: Consider the functions of the Golgi Apparatus.

- A) Accumulation of unprocessed proteins ✓
- B) Decreased energy production
- C) Impaired secretion of proteins ✓
- D) Enhanced lipid synthesis

Potential consequences of a malfunctionING Golgi Apparatus include accumulation of unprocessed proteins and impaired secretion of proteins.

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 procedure.

Hint: Think about how temperature might affect photosynthesis.

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