

Prokaryotic And Eukaryotic Cells Worksheet Answer Key PDF

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Part 1: Building a Foundation

Which of the following structures is present in both prokaryotic and eukaryotic cells?

undefined. A) Nucleus

undefined. C) Ribosomes ✓

undefined. D) Golgi apparatus

undefined. C) Mitochondria

Ribosomes are present in both prokaryotic and eukaryotic cells.

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

undefined. A) Lack of nucleus ✓

undefined. C) Circular DNA ✓

undefined. D) Larger size compared to eukaryotic cells

undefined. C) Presence of membrane-bound organelles

Prokaryotic cells lack a nucleus and have circular DNA.

Describe the main function of the plasma membrane in cells.

The plasma membrane regulates the movement of substances in and out of the cell.

List two examples of organisms that have eukaryotic cells.

1. Example 1

Humans

2. Example 2

Yeasts

Examples include plants, animals, fungi, and protists.

What is the primary function of mitochondria in eukaryotic cells?

undefined. A) Protein synthesis

undefined. C) Genetic material storage

undefined. D) Photosynthesis

undefined. A) Energy production ✓

The primary function of mitochondria is energy production.

Part 2: Application and Analysis

A scientist discovers a new single-celled organism. It has a nucleus and several membrane-bound organelles. To which category does this organism most likely belong?

undefined. A) Prokaryotic

undefined. C) Archaea

undefined. D) Bacteria

undefined. A) Eukaryotic ✓

This organism most likely belongs to the eukaryotic category.

In which scenarios would you expect to find cells undergoing binary fission? (Select all that apply)

undefined. A) Bacterial reproduction ✓

undefined. C) Yeasts reproduction ✓

undefined. D) Amoeba reproduction ✓

undefined. A) Human skin cell division

Binary fission is common in bacterial reproduction and some unicellular eukaryotes.

Describe how the presence of a cell wall in prokaryotic cells contributes to their survival in harsh environments.

The cell wall provides structural support and protection against environmental stress.

Which structural component is crucial for the movement of substances in and out of the cell?

undefined. A) Nucleus

undefined. C) Plasma membrane ✓

undefined. D) Ribosomes

undefined. A) Cell wall

The plasma membrane is crucial for the movement of substances in and out of the cell.

Analyze the following statements and identify which are true for both prokaryotic and eukaryotic cells. (Select all that apply)

undefined. A) Both have ribosomes for protein synthesis. ✓

undefined. C) Both have a plasma membrane. ✓

undefined. D) Both have mitochondria for energy production.

undefined. A) Both contain a defined nucleus.

Both cell types have ribosomes and a plasma membrane.

Part 3: Evaluation and Creation

If a eukaryotic cell loses its Golgi apparatus, which cellular process would be directly affected?

undefined. A) Energy production

undefined. C) DNA replication

undefined. D) Lipid synthesis

undefined. A) Protein modification and sorting ✓

The process of protein modification and sorting would be directly affected.

Evaluate the following scenarios and identify which would likely lead to the evolution of a prokaryotic cell into a more complex form. (Select all that apply)

undefined. A) Increase in environmental complexity ✓

undefined. C) Decrease in available nutrients

undefined. D) Isolation in a stable environment

undefined. A) Symbiotic relationships with other cells ✓

Increased environmental complexity and symbiotic relationships could lead to evolution.

Propose a hypothesis on how eukaryotic cells might have evolved from prokaryotic cells, considering the endosymbiotic theory.

The endosymbiotic theory suggests that eukaryotic cells evolved from prokaryotic cells through symbiotic relationships.

Reflect on the role of organelles in eukaryotic cells and suggest two ways in which they contribute to cellular efficiency and specialization.

1. Way 1

Compartmentalization of metabolic processes.

2. Way 2

Specialization of organelles for specific functions.

Organelles contribute to efficiency by compartmentalizing functions and allowing specialization of tasks.