Prokaryotic And Eukaryotic Cells Worksheet

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Part 1: Building a Foundation

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

Hint: Think about the basic components that all cells share.

- ◯ A) Nucleus
- ◯ C) Ribosomes
- ◯ D) Golgi apparatus
- ◯ C) Mitochondria

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

Hint: Consider the defining features of prokaryotic cells.

- ☐ A) Lack of nucleus
- ☐ C) Circular DNA
- ☐ D) Larger size compared to eukaryotic cells
- ☐ C) Presence of membrane-bound organelles

Describe the main function of the plasma membrane in cells.

Hint: Think about the role of the plasma membrane in maintaining homeostasis.

List two examples of organisms that have eukaryotic cells.

Hint: Consider both unicellular and multicellular organisms.

1. Example 1

2. Example 2

What is the primary function of mitochondria in eukaryotic cells?

Hint: Consider the role of mitochondria in energy metabolism.

- ◯ A) Protein synthesis
- ◯ C) Genetic material storage
- ◯ D) Photosynthesis
- ◯ A) 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?

Hint: Think about the defining features of cell types.

- ◯ A) Prokaryotic
- ◯ C) Archaea
- ◯ D) Bacteria
- ◯ A) Eukaryotic

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

Hint: Consider the types of organisms that reproduce this way.

- ☐ A) Bacterial reproduction
- ☐ C) Yeasts reproduction
- ☐ D) Amoeba reproduction
- ☐ A) Human skin cell division

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

Hint: Think about the protective functions of the cell wall.

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

Hint: Consider the role of membranes in cellular transport.

- ◯ A) Nucleus
- ◯ C) Plasma membrane
- ◯ D) Ribosomes
- ◯ A) Cell wall

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

Hint: Consider the common features shared by both cell types.

- ☐ A) Both have ribosomes for protein synthesis.
- ☐ C) Both have a plasma membrane.
- ☐ D) Both have mitochondria for energy production.
- ☐ A) Both contain a defined nucleus.

Part 3: Evaluation and Creation

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

Hint: Think about the role of the Golgi apparatus in the cell.

- ◯ A) Energy production
- ◯ C) DNA replication
- ◯ D) Lipid synthesis
- ◯ A) Protein modification and sorting

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)

Hint: Consider factors that drive evolutionary changes in cells.

- [ ] A) Increase in environmental complexity
- [ ] C) Decrease in available nutrients
- [ ] D) Isolation in a stable environment
- [ ] A) Symbiotic relationships with other cells

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

Hint: Think about the relationships between different cell types.

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

Hint: Consider how organelles work together to perform specific functions.

1. Way 1

2. Way 2