

Prokaryotic vs Eukaryotic Cells Quiz Questions and Answers PDF

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What type of ribosomes are found in prokaryotic cells?

- 60S
- 70S ✓
- 80S
- 90S

Prokaryotic cells contain 70S ribosomes, which are smaller than the 80S ribosomes found in eukaryotic cells. These ribosomes are composed of a 50S large subunit and a 30S small subunit.

In which type of cell would you find mitochondria?

- Prokaryotic
- Eukaryotic ✓
- Both
- None of the above

All eukaryotic cells, including animal and plant cells, contain mitochondria, which are essential for energy production. Prokaryotic cells, such as bacteria, do not have mitochondria.

How do the cell walls of plants and bacteria differ in composition and function?

Plant cell walls are composed mainly of cellulose, while bacterial cell walls are primarily made of peptidoglycan.

Discuss how the presence of membrane-bound organelles in eukaryotic cells contributes to their complexity.

Membrane-bound organelles in eukaryotic cells enable compartmentalization, allowing for distinct environments and specialized functions, which enhances cellular efficiency and complexity.

Which of the following organisms is an example of a eukaryote?

- Bacteria
- Archaea
- Fungi ✓**
- Virus

Eukaryotes are organisms whose cells have a nucleus enclosed within membranes. Examples include animals, plants, fungi, and protists, distinguishing them from prokaryotes, which lack a nucleus.

Explain the role of plasmids in prokaryotic cells and why they are important.

Plasmids in prokaryotic cells serve as vectors for genetic information, allowing for the transfer of genes that can provide benefits like antibiotic resistance or metabolic capabilities, thus enhancing survival and adaptability.

Why is the evolutionary timeline of prokaryotic and eukaryotic cells significant in understanding cellular evolution?

The evolutionary timeline of prokaryotic and eukaryotic cells is significant in understanding cellular evolution because it reveals how simple life forms evolved into more complex organisms, providing insights into the development of cellular structures and functions.

Describe the differences in DNA organization between prokaryotic and eukaryotic cells.

Prokaryotic cells have circular DNA organized in a nucleoid, whereas eukaryotic cells have linear DNA organized into chromosomes within a nucleus.

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

- They have a nucleus.
- They reproduce by binary fission. ✓
- They contain plasmids. ✓
- They have linear DNA.

Prokaryotic cells are unicellular organisms that lack a nucleus and membrane-bound organelles, and they typically have a simpler structure compared to eukaryotic cells. They reproduce asexually through binary fission and have a cell wall made of peptidoglycan in bacteria.

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

- Presence of a nucleus ✓
- Circular DNA
- Membrane-bound organelles ✓
- Smaller size than prokaryotic cells

Eukaryotic cells are characterized by the presence of a nucleus, membrane-bound organelles, and a complex structure. They are typically larger than prokaryotic cells and can be unicellular or multicellular organisms.

What features are unique to eukaryotic cells compared to prokaryotic cells? (Select all that apply)

- Presence of a nucleoid
- Linear DNA** ✓
- Larger ribosomes** ✓
- Lack of membrane-bound organelles

Eukaryotic cells are characterized by the presence of membrane-bound organelles, including a nucleus, and they typically have larger sizes and more complex structures compared to prokaryotic cells. Other unique features include the presence of linear chromosomes and a cytoskeleton.

Which cell type is believed to have appeared first in evolutionary history?

- Prokaryotic** ✓
- Eukaryotic
- Both appeared simultaneously
- None of the above

Prokaryotic cells, specifically bacteria, are believed to have appeared first in evolutionary history, as they are simpler and more ancient than eukaryotic cells.

Which of the following structures is absent in prokaryotic cells?

- Ribosomes
- Nucleus** ✓
- Cell membrane
- Cytoplasm

Prokaryotic cells lack membrane-bound organelles, which distinguishes them from eukaryotic cells. This absence includes structures such as the nucleus, mitochondria, and endoplasmic reticulum.

What is the primary method of reproduction in prokaryotic cells?

- Mitosis
- Meiosis
- Binary fission** ✓
- Budding

Prokaryotic cells primarily reproduce through a process called binary fission, where a single cell divides into two identical daughter cells. This method allows for rapid population growth under favorable conditions.

Which of the following structures can be found in both prokaryotic and eukaryotic cells? (Select all that apply)

- Ribosomes ✓**
- Mitochondria
- Cell membrane ✓**
- Nucleus

Both prokaryotic and eukaryotic cells share several common structures, including ribosomes and cell membranes, which are essential for cellular function and integrity.

Compare and contrast the processes of mitosis and binary fission. How do these processes reflect the complexity of the cells involved?

The main differences between mitosis and binary fission are that mitosis is a complex process involving multiple stages (prophase, metaphase, anaphase, and telophase) and occurs in eukaryotic cells, while binary fission is a simpler, direct division process that occurs in prokaryotic cells, resulting in two identical daughter cells.

Which processes are involved in eukaryotic cell division? (Select all that apply)

- Binary fission
- Mitosis ✓**
- Meiosis ✓**
- Budding

Eukaryotic cell division involves several key processes, primarily mitosis and cytokinesis, which ensure the accurate distribution of genetic material and the division of the cytoplasm, respectively.

Which type of cell is generally larger in size?

- Prokaryotic
- Eukaryotic ✓**
- Both are the same size
- None of the above

Generally, eukaryotic cells are larger in size compared to prokaryotic cells. This is due to their more complex structure and the presence of membrane-bound organelles.

What are some examples of eukaryotic organisms? (Select all that apply)

- Plants ✓**
- Animals ✓**
- Bacteria
- Fungi ✓**

Eukaryotic organisms include a diverse range of life forms that have complex cells with a nucleus. Examples include animals, plants, fungi, and protists.

What is the composition of the cell wall in most bacteria?

- Cellulose
- Chitin
- Peptidoglycan ✓**
- Lignin

The cell wall in most bacteria is primarily composed of peptidoglycan, a polymer consisting of sugars and amino acids that provides structural support and protection.