Reading Informational Text

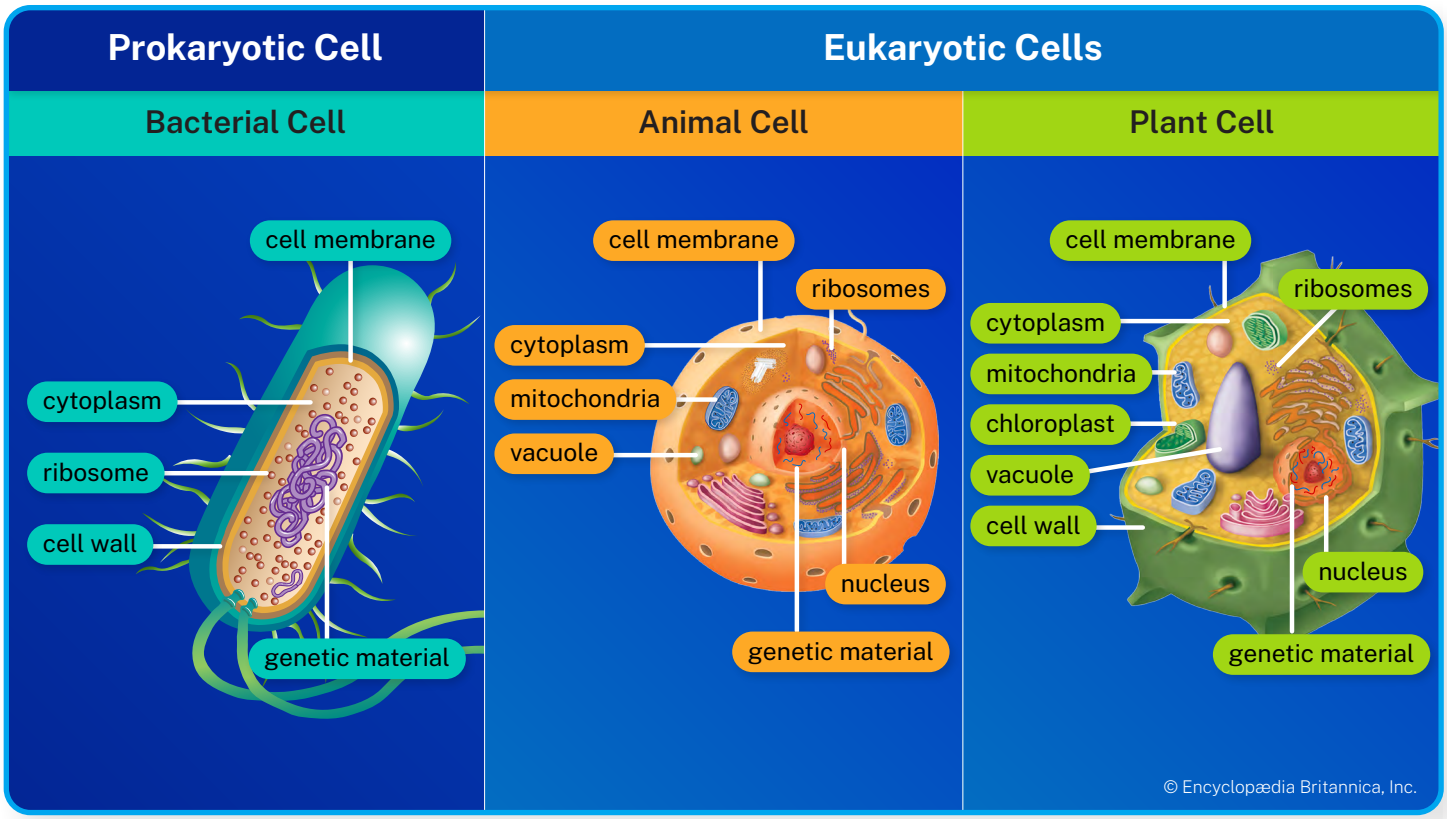
Britannica EDUCATION

Name: **Date:**

Prokaryotes and Eukaryotes

Instructions: Read the article and examine the labeled diagrams to answer the questions below.

Organisms can be classified into the prokaryote or eukaryote categories based on their cell structures. All prokaryotes are unicellular, while eukaryotes are either unicellular or multicellular. All bacteria and archaea, for example, are prokaryotes, while protists, fungi, plants, and animals are eukaryotes. The labeled diagrams below show examples of prokaryotic and eukaryotic cells.



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Prokaryotic and Eukaryotic Cell Structures

Prokaryotes are tiny organisms made up of one prokaryotic cell that lacks a cell nucleus and other specialized cell parts called organelles. Eukaryotes have larger, more complex cells called eukaryotic cells that have a nucleus and several other organelles, which are tiny membrane-bound structures that perform specific functions. The nucleus in eukaryotic cells regulates cell activities and houses the genetic material. Organelles include mitochondria that release energy and vacuoles that store food and water. Plant cells and some protist cells contain chloroplasts, which synthesize food through photosynthesis.

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Despite their differences, prokaryotic and eukaryotic cells share some similarities—such as a cell membrane, also known as the plasma membrane; cytoplasm; ribosomes; and genetic material. The cell membrane regulates the transport of materials, such as water and nutrients, entering and exiting the cell. Cytoplasm is a fluid-like material found inside the cell membrane. Ribosomes produce proteins used by the organism. The genetic material provides instructions for cell structure and function. Additionally, most prokaryotes and some eukaryote cells (specifically, plants) have a cell wall that surrounds and protects the cells.

1. What is the central idea of the article?
   - **a.** Every organism on Earth is made up of one or more cells.
   - **b.** All prokaryotes, such as bacteria and archaea, are unicellular.
   - **c.** Prokaryotic cells and eukaryotic cells have similarities and differences.
   - **d.** Cell structures, such as the cell membrane and nucleus, have specific functions.

2. What does the word *synthesize* mean as used in the following sentence from the article? Plant cells and some protist cells contain chloroplasts, which *synthesize* food through photosynthesis.
   - **a.** blend
   - **b.** produce
   - **c.** combine
   - **d.** integrate

3. Which information in the article is best supported by the included diagrams?
   - **a.** Prokaryotes are tiny organisms made up of one prokaryotic cell.
   - **b.** Despite their differences, prokaryotic and eukaryotic cells have some structures in common.
   - **c.** The nucleus in eukaryotic cells regulates cell activities and houses the genetic material.
   - **d.** The cell membrane regulates the transport of materials, such as water and nutrients, entering and exiting the cell.

4. According to the article, what is a difference between prokaryotic cells and eukaryotic cells?
   - **a.** Eukaryotic cells have vacuoles, but prokaryotic cells do not.
   - **b.** Prokaryotic cells have a nucleus, but eukaryotic cells do not.
   - **c.** Prokaryotic cells have ribosomes, but eukaryotic cells do not.
   - **d.** Eukaryotic cells have a cell membrane, but prokaryotic cells do not.

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Prokaryotes and Eukaryotes Answer Key

1. **c.** *Prokaryotic cells and eukaryotic cells have similarities and differences.*

2. **b.** *produce*

3. **b.** *Despite their differences, prokaryotic and eukaryotic cells have some structures in common.*

4. **a.** *Eukaryotic cells have vacuoles, but prokaryotic cells do not.*

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