

# What is a Cell?

## Worksheet

A cell is the basic building block of all living organisms, a membrane-bound unit containing genetic material and structures that carry out life's essential functions.

## Questions

1. Which statement is part of cell theory?

- A) Cells only exist in animals
- B) All cells come from pre-existing cells
- C) Cells never divide
- D) Only plants have cells

2. What is the main difference between prokaryotic and eukaryotic cells?

- A) Prokaryotic cells are always larger
- B) Eukaryotic cells have a true nucleus, prokaryotic cells do not
- C) Prokaryotic cells have mitochondria
- D) Eukaryotic cells lack DNA

3. Which of these organisms has prokaryotic cells?

- A) Human
- B) Mushroom
- C) Bacterium
- D) Oak tree

4. What structure controls what enters and exits a cell?

- A) Nucleus
- B) Ribosome
- C) Cell membrane
- D) Cytoskeleton

5. A human cheek cell is about 60 micrometers (μm) in diameter. How many of these cells would fit end-to-end across a 6 cm ruler?

6. Classify the following as prokaryotic or eukaryotic: a bacterium, a human skin cell, a yeast cell, an archaeon.

7. According to cell theory, if a tissue sample shows structures without a nucleus or clear cell membrane, could it be classified as living cells?

8. Define: What is the cell theory?

9. Define: Prokaryotic vs eukaryotic cell?

10. Define: What surrounds every cell?

## Answer Key

1. B) All cells come from pre-existing cells - Cell theory states new cells arise only from existing cells.
2. B) Eukaryotic cells have a true nucleus, prokaryotic cells do not - The presence of a membrane-bound nucleus defines eukaryotic cells.
3. C) Bacterium - Bacteria are prokaryotes, lacking a nucleus.
4. C) Cell membrane - The cell (plasma) membrane regulates transport in and out of the cell.
5.  $6\text{ cm} = 60,000\text{ m}$   $60,000\text{ m} / 60\text{ m per cell} = 1,000\text{ cells}$  So about 1,000 cheek cells would fit end-to-end
6. Bacterium: prokaryotic (no nucleus) Human skin cell: eukaryotic (has nucleus) Yeast cell: eukaryotic (fungus, has nucleus) Archaeon: prokaryotic (no nucleus)
7. Cell theory states all living things are made of cells Cells must have a membrane and (usually) genetic material organized within Structures lacking these features (e.g., a virus) are not classified as true cells
8. All living things are made of cells, the cell is the basic unit of life, and all cells come from pre-existing cells.
9. Prokaryotic cells lack a nucleus and membrane-bound organelles; eukaryotic cells have both.
10. A cell membrane (plasma membrane) that controls what enters and exits the cell.

### **Bounlu**

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