

Cell Theory Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

Which scientist is credited with first using the term "cell" after observing cork under a microscope?

Hint: Think about the early pioneers of microscopy.

- Anton van Leeuwenhoek
- Matthias Schleiden
- Robert Hooke ✓
- Theodor Schwann

Robert Hooke is credited with first using the term 'cell'.

Which of the following are key tenets of the cell theory? (Select all that apply)

Hint: Consider the fundamental principles of cell biology.

- All living organisms are composed of one or more cells. ✓
- Cells can spontaneously generate from non-living material.
- The cell is the basic unit of life. ✓
- All cells arise from pre-existing cells. ✓

The key tenets include that all living organisms are composed of cells, the cell is the basic unit of life, and all cells arise from pre-existing cells.

Explain why the cell is considered the basic unit of life.

Hint: Think about the functions that cells perform.

Cells are considered the basic unit of life because they perform all necessary functions for an organism's survival.

List two types of cells and provide one characteristic of each.

Hint: Consider both plant and animal cells.

1. Type of cell 1 and characteristic

Plant cell: has a cell wall.

2. Type of cell 2 and characteristic

Animal cell: has no cell wall.

Examples include plant cells, which have a cell wall, and animal cells, which do not.

Part 2: Comprehension and Application

Which statement best describes the contribution of Theodor Schwann to cell theory?

Hint: Think about the role of Schwann in the development of cell theory.

- He discovered the nucleus in plant cells.
- He stated that all animals are composed of cells. ✓
- He observed bacteria using a microscope.
- He concluded that cells arise from pre-existing cells.

Theodor Schwann stated that all animals are composed of cells.

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

Hint: Consider the basic components of cells.

- Nucleus
- Cell membrane ✓
- Ribosomes ✓
- mitochondria

Both prokaryotic and eukaryotic cells have a cell membrane and ribosomes.

How would you apply the principles of cell theory to explain the growth of a multicellular organism?

Hint: Think about how cells divide and differentiate.

The principles of cell theory explain that multicellular organisms grow through cell division and differentiation.

If a new organism is discovered and it is found to have cells with a nucleus, which type of cell does it most likely have?

Hint: Consider the characteristics of cell types.

- Prokaryotic
- Eukaryotic ✓
- Bacterial
- Viral

If the organism has cells with a nucleus, it most likely has eukaryotic cells.

Part 3: Analysis, Evaluation, and Creation

Which of the following best explains why viruses are not considered living organisms under cell theory?

Hint: Think about the characteristics that define life.

- They can replicate only inside host cells. ✓
- They have a simple structure.
- They do not have a cell membrane.
- They are smaller than bacteria.

Viruses are not considered living organisms because they can replicate only inside host cells.

Analyze the following statements and select those that correctly describe differences between prokaryotic and eukaryotic cells. (Select all that apply)

Hint: Consider the structural differences between these cell types.

- Prokaryotic cells have a nucleus, while eukaryotic cells do not.
- Eukaryotic cells have membrane-bound organelles, while prokaryotic cells do not. ✓
- Prokaryotic cells are generally smaller than eukaryotic cells. ✓
- Eukaryotic cells can form multicellular organisms, while prokaryotic cells cannot. ✓

Eukaryotic cells have membrane-bound organelles, while prokaryotic cells do not, and prokaryotic cells are generally smaller.

Evaluate the impact of the development of the microscope on our understanding of cell theory.

Hint: Think about how microscopy has changed biology.

The development of the microscope allowed scientists to observe cells for the first time, leading to the formulation of cell theory.

Propose a research study that could further explore an aspect of cell theory. Include your hypothesis and the methods you would use.

Hint: Consider what aspect of cell theory interests you most.

A proposed study could investigate the role of stem cells in differentiation, hypothesizing that specific signals influence cell fate.