

Cell Theory Worksheet - Answer Key

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Cell Theory Worksheet: ANSWER KEY

Correct answers are in green.

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Which of the following is the theory that is the unifying foundation of cell biology?
(Circle the correct answer)

- Binary fission theory
- Nucleoplasm theory
- **Cell theory**
- Pathogen theory
- Electromagnetic theory
- Germ theory

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What is the cell theory?

- Write your response here.
- **Cell theory is a theory in biology. It describes the fundamental structure and organization of living things.**
- **It states that all living organisms consist of cells, that the cell is the basic unit of structure, and that all cells come from other cells.**

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Why is cell theory important?

(list at least four (4) reasons)

- Cell theory is important because it:
 - **Defines what life is. It provides a framework for determining whether an organism can be considered alive.**
 - **Helps us understand how organisms are created, grow, and die**
 - **Helps us understand why organisms take the forms they do.**
 - **Forms the foundation for modern medicine.**
 - **Forms the foundation for preventing and managing diseases like cancer and infections.**

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What are the three (3) parts of cell theory?

- **All known, living organisms are composed of one or more cells.**
- **The cell is the fundamental unit of structure and function in all living organisms. Cells are the smallest living things. Anything smaller than a cell is not considered alive.**
- **The creation of new cells depends on division of existing cells.**

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Which is part of cell theory? (select three (3))

- All known, living organisms are composed of one or more cells.
- Diseases are caused by germs.
- The creation of new cells depends on division of existing cells.
- The cell is the fundamental unit of structure and function in all living organisms.
- Cells are collections of interconnected species.
- Cells take in oxygen and expel carbon dioxide.

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According to the cell theory, which of the following are made of cells? (circle all that apply)

- Carbon dioxide
- Skin
- Blood
- Water
- Muscle
- Clay

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Which of the following is not part of cell theory? (circle all that apply)

- All known, living organisms are composed of one or more cells.
- Disease is caused by imbalance in the four fluid humors.
- Material containing pneuma ("vital heat") can create life.
- Life arises from nonliving matter.
- The creation of new cells depends on division of existing cells.
- The cell is the fundamental unit of structure and function in all living organisms.

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According to the cell theory, which describes cells?

- The cell is the fundamental unit of structure and function in living things. All organisms are made up of one or more cells. Cells arise from other cells through cellular division.
- The cell is a tiny, solid structure found in living organisms that functions like a microscopic battery, storing energy for the body's use. They are shaped like small cubes.

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Which statement is one component of the cell theory?

(circle the correct answer)

- The microorganism must be found in diseased but not healthy individual.
- Specific germs cause specific diseases.
- Four bodily fluids determine a person's temperament.
- The creation of new cells depends on division of existing cells.

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Which timeline best shows the history of the development of cell theory?

- Nuclei observed in plant, then animal cells.
- Recognition that some organisms are unicellular, while others are multicellular.
- Recognition that cells arise from pre-existing cells through division.
- Recognition that cells are "elementary particles of organisms" in both plants and animals.
- Recognition that some organisms are unicellular, while others are multicellular.
- Nuclei observed in plant, then animal cells.
- Recognition that cells arise from preexisting cells through division.
- Recognition that cells are "elementary particles of organisms" in both plants and animals.

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How did **Robert Hooke** contribute to the cell theory?

In 1665, Robert Hooke looked at cork through rudimentary microscope. He saw a pattern of tiny, empty compartments. The cells he looked at were empty because the cells themselves were already dead. He called these “cellulae”, a word based on the Latin words for “small room” and the six-sided shape of a honeycomb.

What was **Anton van Leeuwenhoek's** contribution to the development of cell theory?

Anton van Leeuwenhoek made a microscope capable of magnifying objects more than previous microscopes.

Thanks to the increased magnification, Leeuwenhoek could see things moving. He described many microorganisms, including protozoa and other unicellular creatures.

He was the first to see animal cells becoming fertilized but did not observe cell division.

How did **Matthias Schleiden** contribute to the cell theory?

Botanist Matthias Jakob Schleiden made two statements about plants.

First, he stated that “lower plants” consist of one cell. Second, he stated that “higher” plants are composed of many cells.

Together with Theodor Schwann, he determined that cells are “elementary particles of organisms” in both plants and animals.

How did **Theodor Schwann** contribute to the cell theory?

Theodor Schwann stated that higher animals are composed of many individual cells.

Together with Matthias Schleiden, he determined that cells are “elementary particles of organisms” in both plants and animals.

How did **Robert Remak** contribute to the cell theory?

Robert Remak contributed the third principle of cell theory – that all cells arise only from cells that already exist.

Remak published observations on cell division.

He identified cell division as the means by which animal cells reproduce.

How did **Louis Pasteur** contribute to the cell theory?

Louis Pasteur published studies that helped establish the principle of “biogenesis”.

Biogenesis states that organisms only arise by reproducing with other organisms.

Pasteur's work helped later scientists realize that cells are metabolically active.

Who discovered that all plants are made of cells?

- Louis Pasteur
- Robert Brown
- Rudolph Virchow
- Henri Dutrochet
- Matthias Schleiden
- George Washington

Which invention from the 17th century allowed for the development of modern cell theory?

- Microscope
- Gyroscope
- Telescope
- Parascope

Why have improvements in microscopes over time resulted in revisions in the cell theory?

• **Improved microscopes have revealed new information about cell structure and processes.**

A cell becomes too large to maintain a stable internal environment when
(circle the correct answer)

- Its volume gets too small.
- Its surface area to volume ratio becomes too great.
- Its surface area gets too big.
- Its surface area to volume ration becomes too small.

According to cell theory, viruses are considered nonliving because they...

- Viruses are inert outside of living cells.
- They don't grow or reproduce.
- They don't make their own energy.
- They do not reproduce by division.

What tenet of cell theory best supports the rationale that viruses are not living?

- Viruses do not reproduce by dividing.
- Viruses do not contain genetic material.
- Viruses are too big to be considered cells.
- Viruses can metabolize.

EXTRA CREDIT: Which is a component of the modern cell theory that was not part of the original cell theory? (circle all that apply)

The structure and function of an organism is the result of the total activity of its individual cells.

• Different organisms coexist and interact within a single cell.

• All cells in organisms of similar species share the same basic chemical composition.

• Cells contain DNA and RNA.

• Energy is transformed from one form to another within cells.

• Cells are interconnected networks.

Resources Consulted

- Reece, Jane B., Taylor, Martha R., Dickey, Jean L., and Campbell, Neil A. 2006. *Campbell Biology: Concepts and Connections*. 7th ed. San Francisco: Pearson Education, Inc.
- Johnson, George B. 2012. *The Living World*. 7th ed. New York: The McGraw-Hill Companies, Inc.

GREAT JOB!!

KEEP UP THE GREAT WORK!!