Name: _____ Date: _____

Cells, the Building Blocks of Life

Circle group

Look at a leaf, a fingertip, or a drop of pond water under a microscope. You will see tiny units packed together. These are cells, the smallest units of life. Every living thing is made of one or more cells. A bacterium is just one cell. A person is made of trillions.

Scientists sum up what they know in the cell theory. All living things are made of cells. The cell is the basic unit of how living things are built and how they work. And all cells come from other cells, when one cell splits in two.

Plant cells and animal cells share the same basic parts. The cell membrane is a thin edge around the cell. It controls what goes in and out. Inside is the cytoplasm, a fluid like jelly that holds the other parts. The nucleus holds the cell's DNA, the instructions for how the cell works. Tiny parts called mitochondria get energy out of food so the cell can do its work.

Plant cells have a few extra parts. A stiff cell wall outside the membrane gives a plant cell its shape and strength. Plant cells also have chloroplasts, where photosynthesis happens. Chloroplasts hold chlorophyll, the green stuff that catches energy from sunlight.

Cells have different jobs. Nerve cells carry messages. Red blood cells carry oxygen. Muscle cells squeeze to move the body. Cells with the same job group into tissues. Tissues make up organs, like the heart. Organs work together in organ systems.

One cell or trillions, cells are always busy. They take in materials, get energy, and get rid of waste.

Questions

1. What are the three parts of the cell theory?

_____

_____

2. What does the cell membrane do?

_____

_____

3. What is inside the nucleus?

_____

_____

4. What do mitochondria do?

_____

_____

5. Name two parts that plant cells have but animal cells do not.

_____

_____

6. How do cells, tissues, organs, and organ systems fit together?

_____

_____

7. Why does the author say cells are "always busy"?

_____

_____

Words to know

cell theory: the idea that all living things are made of cells, and that all cells come from other cells

membrane: a thin boundary that controls what goes in and out

nucleus: the part of a cell that holds its DNA

mitochondria: small parts of a cell that release energy from food

chloroplasts: parts of plant cells where photosynthesis takes place

tissues: groups of cells that do the same job

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Cells, the Building Blocks of Life

Triangle group

Look at a leaf, a fingertip, or a drop of pond water through a microscope, and you will see tiny units packed together. These are cells, the smallest units of life. Every living thing is made of one or more cells. A bacterium is a single cell, while a person is made of trillions.

Scientists summarize what they know in the cell theory. All living things are made of cells. The cell is the basic unit of structure and function in living things. And all cells come from other cells that already exist, when one cell divides in two.

Plant and animal cells share the same basic parts. The cell membrane is a thin boundary that controls what enters and leaves. Inside is the cytoplasm, a jelly-like fluid that holds the other parts. The nucleus holds the cell's DNA, the instructions for how the cell works. Small structures called mitochondria release energy from food so that the cell can do its work.

Plant cells have a few extra parts. A stiff cell wall outside the membrane gives a plant cell its shape and strength. Plant cells also contain chloroplasts, where photosynthesis takes place. Chloroplasts hold chlorophyll, the green substance that captures energy from sunlight.

Different cells have different jobs. Nerve cells carry messages. Red blood cells carry oxygen. Muscle cells contract to move the body. Cells with the same job group together into tissues, tissues form organs such as the heart, and organs work together in organ systems.

Whether a living thing has one cell or trillions, its cells are always busy: taking in materials, releasing energy, and getting rid of waste.

Questions

1. What are the three parts of the cell theory?

_____

_____

2. What does the cell membrane do?

_____

_____

3. What does the nucleus hold?

_____

_____

4. What is the job of the mitochondria?

_____

_____

5. What are two parts that plant cells have and animal cells do not?

_____

_____

6. How are tissues, organs, and organ systems related to cells?

_____

_____

7. Why does the author say a cell is "always busy"?

_____

_____

Words to know

cell theory: the idea that all living things are made of cells, and that all cells come from other cells

membrane: a thin boundary that controls what goes in and out

nucleus: the part of a cell that holds its DNA

mitochondria: small parts of a cell that release energy from food

chloroplasts: parts of plant cells where photosynthesis takes place

tissues: groups of cells that do the same job

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Cells, the Building Blocks of Life

Square group

Examine a leaf, a fingertip, or a droplet of pond water through a microscope, and you will discover tiny units packed tightly together. These are cells, the smallest units of life. Every living organism consists of one or more cells: a bacterium is a single cell, whereas a human being comprises trillions.

Scientists summarize their understanding in the cell theory, which makes three central claims. All living things are composed of cells. The cell is the fundamental unit of structure and function in living things. And all cells originate from other, preexisting cells, through the process by which one cell divides in two.

Plant and animal cells share the same essential components. The cell membrane is a thin boundary that regulates which substances enter and leave. Within it lies the cytoplasm, a jelly-like fluid that holds the other structures. The nucleus contains the cell's DNA, the instructions governing how the cell functions. Small structures called mitochondria release energy from food, enabling the cell to perform its work.

Plant cells possess several additional components. A rigid cell wall surrounding the membrane provides a plant cell with its shape and structural strength. Plant cells also contain chloroplasts, the sites where photosynthesis occurs; chloroplasts hold chlorophyll, the green substance that captures energy from sunlight.

Different cells perform specialized functions. Nerve cells transmit messages, red blood cells transport oxygen, and muscle cells contract to move the body. Cells sharing the same function cluster together into tissues, tissues combine to form organs such as the heart, and organs cooperate within organ systems.

Whether an organism consists of a single cell or trillions, its cells are perpetually active: absorbing materials, releasing energy, and eliminating waste.

Questions

1. State the three principles of the cell theory.

_____

_____

2. What is the function of the cell membrane?

_____

_____

3. What does the nucleus contain?

_____

_____

4. What role do mitochondria perform?

_____

_____

5. Identify two components found in plant cells but not in animal cells.

_____

_____

6. Explain the hierarchy linking cells, tissues, organs, and organ systems.

_____

_____

7. What justifies the author's description of cells as "perpetually active"?

_____

_____

Words to know

cell theory: the idea that all living things are made of cells, and that all cells come from other cells

membrane: a thin boundary that controls what goes in and out

nucleus: the part of a cell that holds its DNA

mitochondria: small parts of a cell that release energy from food

chloroplasts: parts of plant cells where photosynthesis takes place

tissues: groups of cells that do the same job

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Cells, the Building Blocks of Life

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Cells, the Building Blocks of Life

Easier · 268 words · Flesch-Kincaid grade 4.1

1. All living things are made of cells. The cell is the basic unit of how living things are built and work. All cells come from other cells.
2. It controls what goes in and out of the cell.
3. The cell's DNA, the instructions for how the cell works.
4. They get energy out of food so the cell can do its work.
5. A cell wall and chloroplasts.
6. Cells with the same job group into tissues, tissues make up organs, and organs work together in organ systems.
7. They are always taking in materials, getting energy, and getting rid of waste.

Triangle: Cells, the Building Blocks of Life

This passage · 273 words · Flesch-Kincaid grade 6.1

1. All living things are made of cells. The cell is the basic unit of structure and function in living things. All cells come from other cells that already exist.
2. It controls what enters and leaves the cell.
3. The cell's DNA, the instructions for how the cell works.
4. They release energy from food so the cell can do its work.
5. Any two of: a cell wall, chloroplasts. The passage names these two extra parts.
6. Cells with the same job group into tissues, tissues form organs, and organs work together in organ systems.
7. Cells are always taking in materials, releasing energy, and getting rid of waste, whether a living thing has one cell or trillions.

Square: Cells, the Building Blocks of Life

Harder · 280 words · Flesch-Kincaid grade 10

1. All living things are composed of cells. The cell is the fundamental unit of structure and function. All cells originate from preexisting cells.
2. It regulates which substances enter and leave the cell.
3. The cell's DNA, the instructions governing how the cell functions.
4. They release energy from food, enabling the cell to perform its work.
5. A rigid cell wall and chloroplasts.
6. Cells sharing a function cluster into tissues, tissues combine into organs, and organs cooperate within organ systems.
7. Cells are continually absorbing materials, releasing energy, and eliminating waste, whether an organism has one cell or trillions.