

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Connecticut State Standards – Unit I: Life, Cells, and Change Over Time



Grade-Level Concepts:

*Students should understand that:*

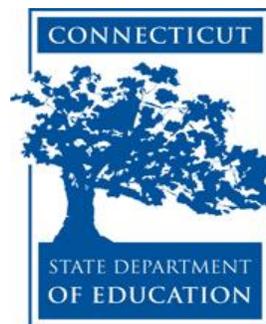
**GRADE-LEVEL CONCEPT 7.2.a.**

1. Living things have characteristics that distinguish them from nonliving things. Living things use energy, respond to their environment, grow and develop, produce waste and reproduce. Organisms are made of tiny cells that perform the basic life functions and keep the organism alive. Many organisms (for example yeast, algae) are single-celled, and many organisms (for example plants, fungi and animals) are made of millions of cells that work in coordination.
2. All cells come from other cells and they hold the genetic information needed for cell division and growth. When a body cell reaches a certain size, it divides into two cells, each of which contains identical genetic information. This cell division process is called mitosis.
3. The cell is filled with a fluid called *cytoplasm*; cells contain discrete membrane-enclosed structures called *organelles* that perform specific functions that support the life of the organism. The structure of the organelle is related to its function.
  - The nucleus contains the genetic materials (chromosomes), and it directs the cell activities, growth and division.
  - The mitochondrion contains enzymes that break down sugars and release chemical energy. One cell can contain hundreds of mitochondria.
  - The entire cell is surrounded by the plasma membrane that controls the flow of materials into and out of the cell.

**KEY CONCEPT WORDS:** structure, function, cell, organelle, cytoplasm, nucleus, cell membrane, mitochondrion,

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Grade-Level Concepts:

*Students should understand that:*

**GRADE-LEVEL CONCEPT 7.4.a.**

1. Microorganisms (microbes) are microscopic organisms, such as bacteria, yeast and mold, that are found almost everywhere: in air, soil and water, inside our bodies and in our foods.
2. Bacteria are single-celled organisms that differ from other single-celled organisms in that they do not have organelles such as a nucleus, mitochondrion or chloroplast.
3. Bacteria are an essential component of any food web because they break down complex organic matter into simple materials used by plants. Some bacteria can produce their own food through photosynthesis and others are consumers that compete for foods that humans eat.
4. Some bacteria can be beneficial to humans. Certain bacteria live symbiotically in the digestive tracts of animals (including humans) and help break down food. Other bacteria are used by humans to purify waste water and to produce foods such as cheese and yogurt.
5. Some bacteria are harmful to humans. They can spoil food, contaminate water supplies and cause infections and illness.
6. Food preservation methods create conditions that kill bacteria or inhibit their growth by interfering with the bacterium's life processes. Food preservation methods include removing moisture by dehydration or salting, removing oxygen by vacuum-packing, lowering pH by pickling, lowering temperature by refrigerating or freezing, and destroying the bacterial cells by irradiation or heat (pasteurizing and cooking).
7. Throughout history, humans have developed different methods to ensure the availability of safe food and water to people around the world.

**KEY CONCEPT WORDS:** microbe, bacteria, single-celled organism, dehydration, pickling, irradiation