

## The Characteristics of Life

Biologists have formulated a list of characteristics by which we can recognize living things. Anything that possesses all of the characteristics of life is known as an organism.

To be classified as a living thing, most scientists agree that an object must have all of the following traits:

**1- Reproduction:** is the process by which new organisms are generated. A living organism does not need reproduction to survive, but as a species, they need that for continuity and to ensure that they are not extinct.

**-Sexual Reproduction:** this involves two individuals of the same species, usually a male and female.

**-Asexual reproduction:** This form of reproduction occurs without the involvement of another. There are many forms of asexual reproduction. Mitosis, fission, budding, fragmentation, sporulation and vegetative reproduction.

**2- Adaptation:** are modifications that make an organism suited to its way of life. Also, it's a characteristic that helps living things survive and reproduce in a given environment. It comes about because living things have the ability to change over time in response to the environment.

Adaptations come about through evolution (A change in the characteristics of living things over time).

**3- Metabolism:** all living things can use energy. Their cells have the "machinery" of metabolism, which is the building up and breaking down of chemical compounds. Living things can transform energy by converting chemicals and energy into cellular components. This form of metabolism is called anabolism. They can also break down, or decompose, organic matter, which is called catabolism.

**4- Growth and Development:** All living things have the capacity for growth. Growth is an increase in size that occurs when there is a higher rate of anabolism than catabolism. For example, a human infant has increase in size by the time. First, the fertilized egg develops into a newborn, and then a human goes through the stages of childhood, adolescence, adulthood, and aging. Development also includes the repair that takes place following an injury.

**5- Response to Stimuli:** All living things detect changes in their environment and respond to them. A response can take many forms:

- Movement in humans is dependent upon their nervous and muscular systems.
- The movement of a unicellular organism in response to external chemicals called chemotaxis.
- The leaves of a plant turning toward the sun called phototropism.

**6- Homeostatic:** Homeostasis means “staying the same.” Actually, the internal environment stays relatively constant; for example, the human body temperature fluctuates slightly during the day. All human systems contribute to homeostasis. The digestive system provides nutrient molecules; the circulatory system transports them about the body; and the excretory system rids blood of metabolic wastes. The nervous and hormonal systems coordinate the activities of the other systems.