

Biology and Characteristics of Life

Biology is the study of life.

All living organisms need to carry out certain life processes.



There are 8 essential functions for something to be classified as "alive":

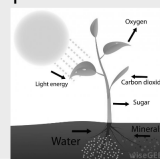
1. Synthesis
2. Transport
3. Excretion
4. Reproduction
5. Nutrition
6. Growth and Development
7. Regulation
8. Respiration

STERNGRR

Synthesis: All living things can make molecules.
Synthesis simply means "to build".

Examples

- a. Photosynthesis - the making of food from smaller molecules and sunlight.
- b. Protein Synthesis-the making of proteins from amino acids.



2. Transport: all living things can move chemicals through out their body, even if the body is only 1 cell.

Examples

- a. Moving oxygen from the lungs into the blood stream
- b. A plant stem has tubes that transport nutrients
 - xylem: water
 - phloem: food



3. Excretion: all living things must be able to remove waste products

Examples

- a. The break-down and removal of lactic acid in muscles
- b. The removal of carbon dioxide (CO₂) from cells



4. Reproduction: Living things give rise to new cells or new organisms using DNA.

Examples

- a. The production of new skin cells
- b. Sexual reproduction to make a new offspring
- c. Bacteria splitting into 2 new organisms (asexual)



5. Nutrition: Gaining energy from a food source

Examples

- a. Bacteria get energy from eating certain chemicals
- b. A plant absorbs sunlight and converts it to energy
- c. A hummingbird drinking nectar



6. Growth & Development: the increase in size and/or the changing throughout the life cycle of an organism

Examples

- a. An acorn develops into an oak tree
- b. A gosling transforms into a goose.
- c. A human child grows and develops into an adult

All living organisms are made of cells!

Multicellular-made of many cells.

Unicellular-made of a single cell.



7. Regulation: The response to an internal or external stimulus

Examples

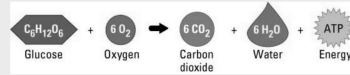
- a. Sweating to cool your body.
- b. Tropism - in Greek it means "a turning"
 - phototropism: plants grow in response to light
 - gravitropism: plants grow in response to gravity
 - thigmotropism: plants grow in response to an object



8. **Respiration**: the releasing of energy from food, resulting in the production of CO₂.
***Not Breathing**

Examples:

- a. Eating a plate of pasta before a football game for energy.



Metabolism - the chemical reactions occurring in your body, also known as STERNRR.

Homeostasis - An ideal internal condition within an organism. It is reached when an organism through regulation!

Use the words homeostasis, regulation, and metabolism in a sentence to show your understanding.

