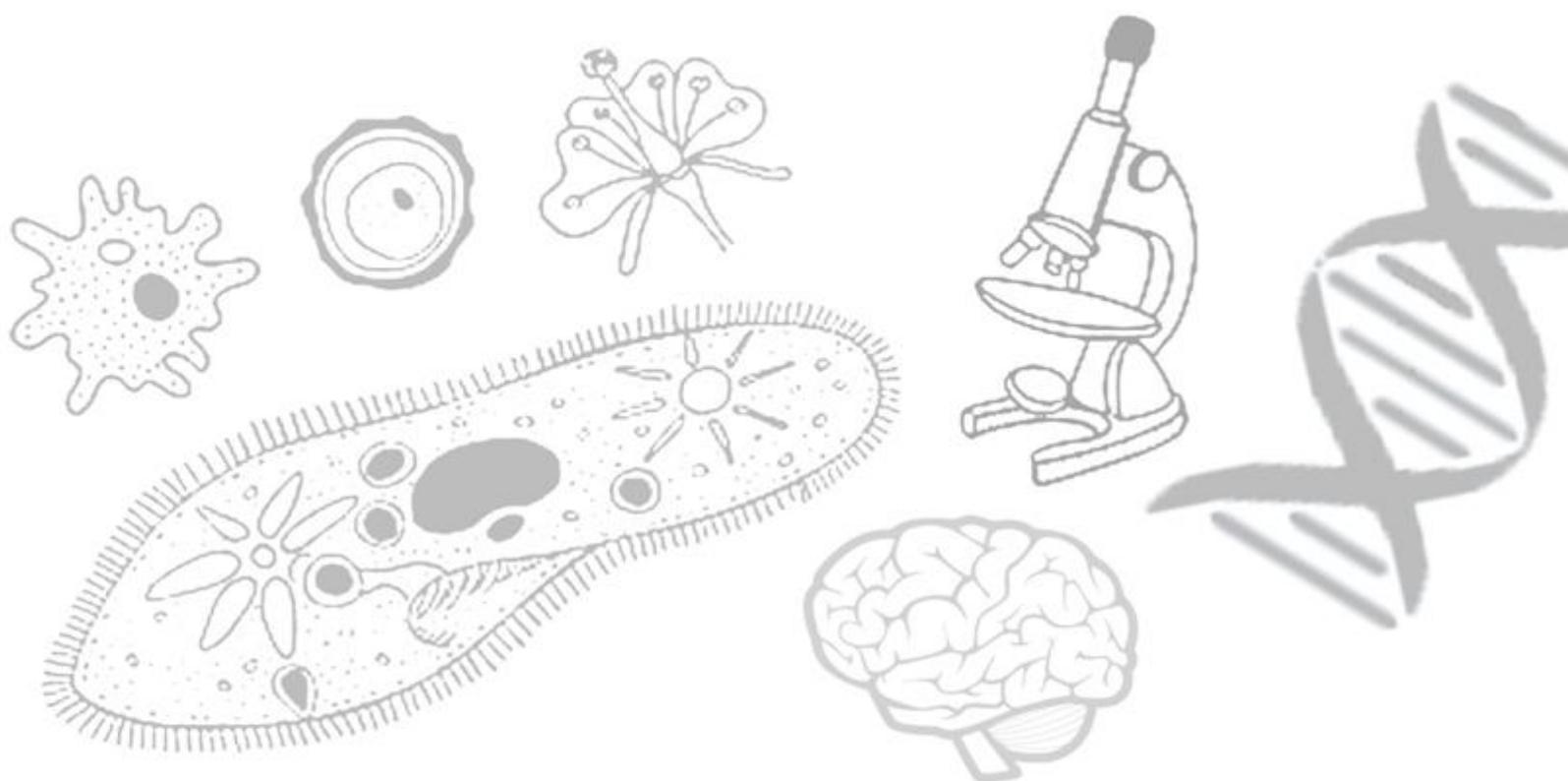


SCIENCE



Characteristics of Living Beings

Living and Non-living Things

Living things

Things which need food, air and water for their survival are called living things.

Examples: Plants, animals, human beings

Non-living things

Things which do not need food, air and water for their survival are called non-living things.

Examples: Table, chair, stone etc.



The study of living things or organisms is called biology.

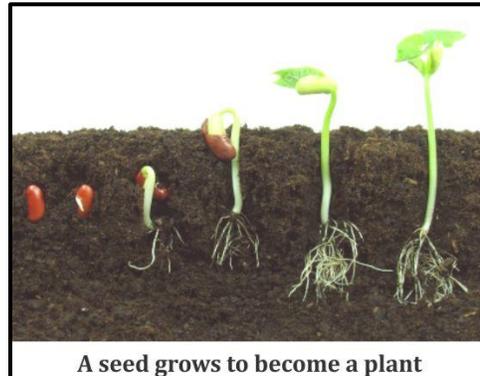
Characteristics of Living Things

Nutrition	• Living things need food, air and water for their survival.
Growth	• Living things can grow and get to their adult size.
Movement	• Living things can move by themselves.
Responsiveness to stimuli	• Living things can respond to the changes around them.
Respiration	• Living things can respire and release energy from food.
Excretion	• Living things can excrete and get rid of waste materials from their body.
Reproduction	• Living things can reproduce and give birth to their young ones.
Life span	• Living things have a definite life span after which they die.

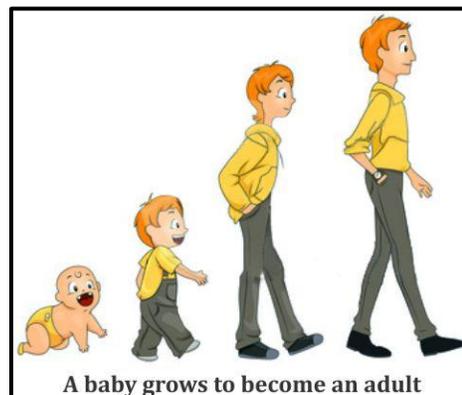
CHARACTERISTIC	DESCRIPTION
Nutrition	<ul style="list-style-type: none"> All living things need food to stay alive. Food provides the material required for growth and energy to carry out various life processes.  <p style="text-align: center;">Living things need water</p> <ul style="list-style-type: none"> They also need air and water to carry out their life activities.  <p style="text-align: center;">Living things need food</p>

Growth

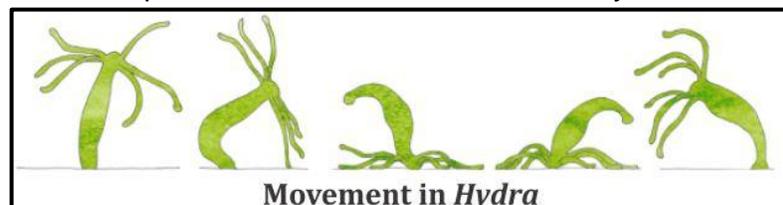
- All living organisms grow and get to their adult size.
- Growth is the gradual increase in the size and mass of an organism over a period of time.
- All living organisms start their life from a single cell.



- The new cells are formed by the division of older cells, thereby increasing the number of cells within the body of an organism. As a result, the volume and mass of the organism increase.
- The growth is permanent and irreversible.
- Plants can grow throughout their life. Animals grow for a definite period of time.

**Movement**

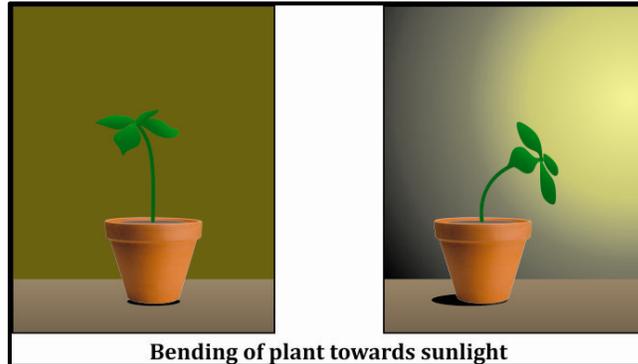
- All living organisms show movement which originates from within the organisms. All living things move on their own accord.
- Birds move by using their wings, while a cow moves by using its limb. A fish uses its fins to move.
- Movement in animals is noticeable, while movement in plants is less conspicuous and occurs in a limited way.



- Animals locomote or move from one place to another in order

to escape from danger, to catch prey or in search of food and shelter.

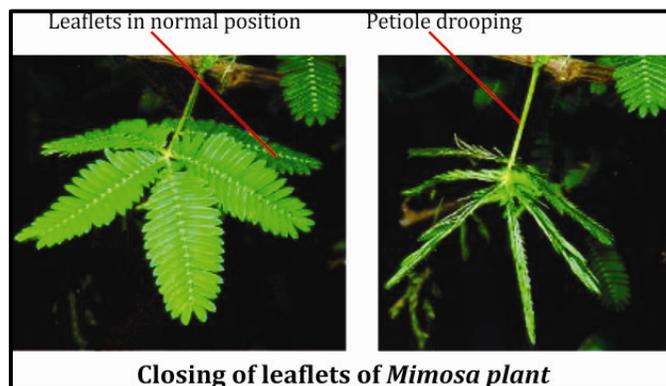
- Plants cannot move from one place to another. However, they can move parts of their body such as leaves, flowers, shoots and roots.



Bending of plant towards sunlight

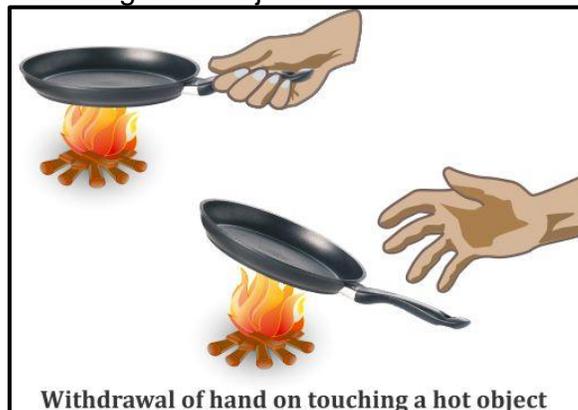
Responsiveness to stimuli

- The characteristic of responsiveness observed in living organisms is also called sensitivity or irritability.
- All living organisms are able to sense and respond and react to stimuli which they receive from their surrounding environment.
- Light, heat, touch, smell, sound and pressure are examples of different types of stimuli.
- In plants, the leaflets of *Mimosa* plant fold up and droop when touched.



Closing of leaflets of *Mimosa* plant

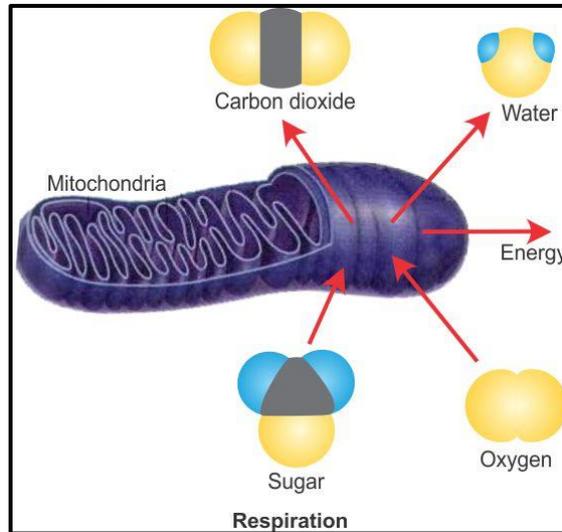
- In animals, millipedes coil in any danger. We withdraw our hand on touching a hot object.



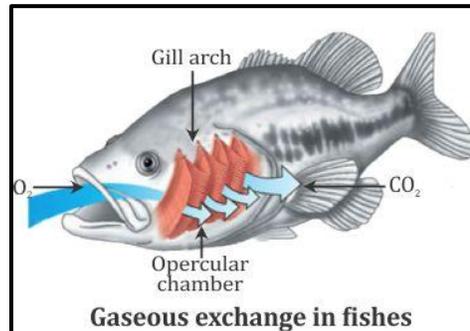
Withdrawal of hand on touching a hot object

Respiration

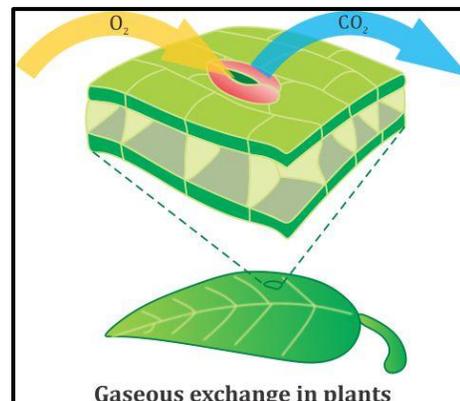
- All living organisms carry out respiration for the release of energy contained in food.
- Most living organisms need oxygen to carry out respiration.
- Oxygen helps in the oxidation of complex food into simpler substances such as carbon dioxide and water. Energy is released during this process.



- Aquatic animals such as fish have special breathing organs called gills.

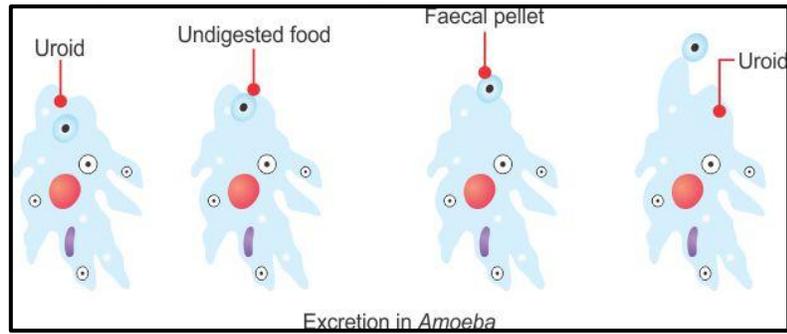


- Animals such as earthworms breathe through their skin, while insects breathe through holes called spiracles present all along their body.
- Plants carry out respiration by means of tiny pores called stomata present on their leaves and stem.



Excretion

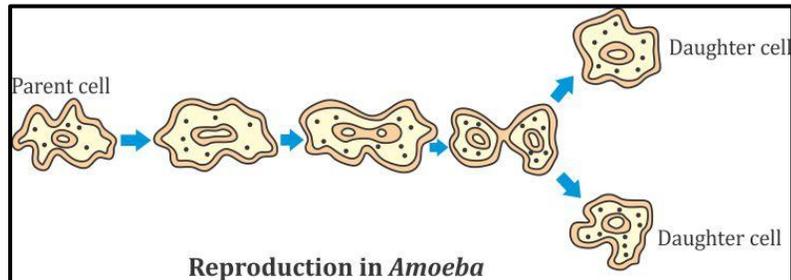
- Several chemical reactions occur inside the body. Some of the products formed during these reactions may be harmful for the body. The body gets rid of these harmful products through the process of excretion.
- In animals, the unused and unwanted food is excreted in the form of faeces. Excess of water produced in the body is eliminated in the form of urine and sweat. Excess of CO_2 in the body is eliminated during exhalation.



- Plants excrete their waste materials in the form of vapour, gums and resins. Plants also store waste products in their roots, stem or leaves. These plant parts fall and the plant gets rid of the waste materials.

Reproduction

- A living organism is able to produce another living organism like itself. This process is called reproduction. Reproduction ensures continuity of life.
- The mode of reproduction may differ in different organisms.
- Animals such as *Amoeba* reproduce through cell division. The cell divides into two smaller cells, each of which grows into an adult cell in due course of time.



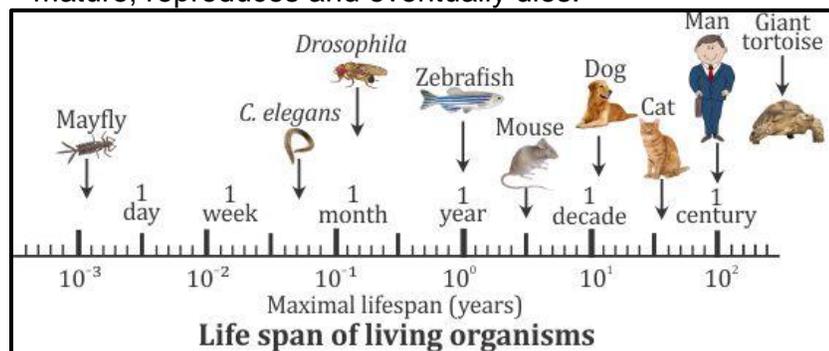
- In sexual reproduction, a sperm cell from the male parent unites with the egg cell of the female parent, resulting in the development of a new individual.
- Plants reproduce either from seeds (wheat), buds (rose), tubers (potato) or cuttings of the parent plant (sugarcane).



Reproduction by stem cutting

Life span

- All living beings have a definite life span.
- After its birth, every individual grows, becomes mature, reproduces and eventually dies.



Life span of living organisms

LIVING ORGANISMS	LIFE SPAN
Housefly	1–4 months
Dog	25 years
Ostrich	50 years
Elephant	70–90 years
Man	60–70 years
Giant sequoia tree	4000 years

Homeostasis is the ability to regulate the internal environment and maintain a stable, relatively constant condition. Living organisms maintain homeostasis. They tend to regulate their internal conditions such as temperature, pressure, pH etc. Homeostasis is essential for the survival of living organisms. An inability to maintain homeostasis may lead to death or disease, a condition known as homeostatic imbalance.

Differences between Living and Non-living Things

Living things

- Need food, air and water
- Can grow
- Can move on their own
- Respond to stimuli
- Can reproduce
- Respire
- Excrete
- Have a definite life span

Non-living things

- Do not need food, air and water
- Do not grow
- Cannot move on their own
- Do not respond to stimuli
- Do not reproduce
- Do not respire
- Do not excrete
- Exist indefinitely