5

STRUCTURE OF LIVING WORLD

Many kinds of organisms are found around us. Living objects are different from non-living objects. A big difference is found in the shape, size and living place of living organisms. These differences become the basis of their division or categories. We have read about them in previous lesson.

You know some organisms are very small and they cannot be seen with naked eye. Some of the organisms are big like elephant and whale which are seen from a distance. Some organisms are helpful for us and they give useful product too. There are many other organisms which harm us. Therefore to know the basic structure of these organisms is beneficial to us. We will learn about some of the selected organism, their benefits and disadvantages. Let us try to know more about them. We will also try to get in touch with some elements of nature and its objects.

OBJECTIVES

After reading this lesson you will be able to:

- Tell the names of most simple and smaller organism on earth
- Describe the similarities found in plants, humans and their organs
- Explain the breathing process and nutrition system of plants
- Explain the various types of plants and parts of flowers with their importance

5.1 BACTERIS-SMALLEST ORGANISMS

Bacteria are the simplest and smallest organisms found on earth. They are found in almost every place like air, water, soil and even inside our body. Their body is made up of single cell and size is from 0.2 to 100 microns (1 micron = 1/1000 millimeter). The central element is not covered by any membrane in the cells of bacteria. There is a cell wall or membrane outside the cell. Bacteria are mostly divided into three shapes-

a. long shape bacteria

b. circular

c. serpentine (lymph) bacteria - curvy like snakes

Bacteria have their own importance. Some bacteria are helpful and some are harmful.

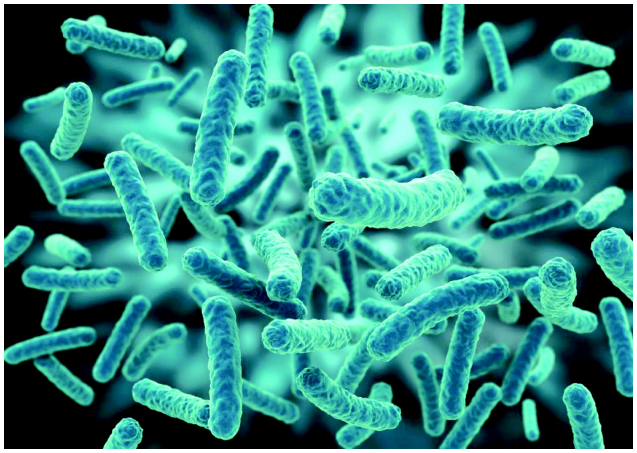


Fig. 5.1 types of bacteria

Benefits and disadvantages of bacteria

(a) Benefits from bacteria

1. Decomposition of dead - many organisms die every day. They decompose dead bodies and leave in nature. This decomposition is reused by plants.
2. Manure making in soil - bacteria found in soil from chemicals like ammonia and nitrate which are useful for plants.
3. Merge with plants - some bacteria merge with plants to change nitrogen to nitrate and give natural manure to the plants. Some special plants are - peas, pulses, beans etc.
4. Cleaning water - some bacteria clean water by decomposing dust, dirt and flowing waste in water.
5. Source of digestion - some bacteria live in the food pipe of cows, goats, flies or some insects etc. they help in the digestion of cellulose (a part of the eaten plant).

6. Food industries- some bacteria are used in food industries to form some of the food items like lactobacillus which help in the preparation of curd from milk. Vinegar is also prepared by the activities of bacteria.

7. Sources of medicines - many antibiotic medicines increase 6the immunity power in body. Immunity power helps in fighting the diseases. Some medicines are prepared by various bacteria. Some vitamins and hormones are prepared with the help of bacteria.

(b) Harmful bacteria

1. cause of many diseases - many bacteria cause diseases like tuberculosis, dysentery, tetanus, whooping cough etc.

2. Destroys food - any food items are destroyed by bacteria. For example - milk, fruits, vegetables etc get rotten by bacteria.

5.2 ALGAE LOOK LIKE PLANTS BUT ARE NOT PLANTS

Algae are simple organism which looks like plants. They have a cell membrane and chlorophyll. They can be single cell or multi cell. They don't have stem or leaves, these are mostly found in water or wet places. Algae make a green surface on wet land which is slippery. Green -green thread like organisms swim on the surface of the pond are also a type of algae. Water tanks which are not cleaned for a longer time has green green slippery structure on the wall; it is also a kind of algae. Algae are a

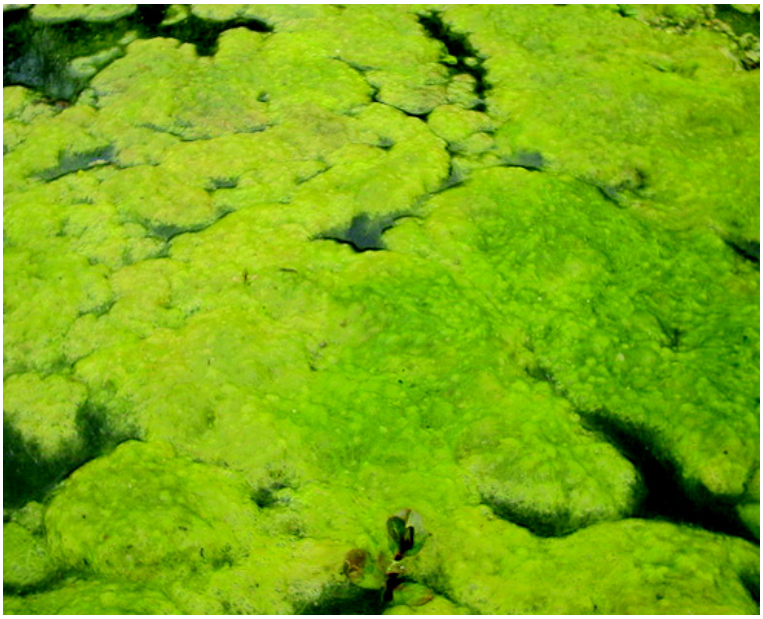


Fig. 5.2 Algae

microscopic organism which ranges from single cell to many meter long cells. Even ocean algae is also a type of algae some places have red algae too.

Algae- useful and harmful

Useful:

1. Some algae are the food of the fishes and water organisms.
2. Some special algae are used to increase the thickness of some special ice creams and jelly.
3. Algae makes food by photosynthesis ad gives our oxygen in nature which is inhaled by other organisms.
4. Some algae are used in industries.
5. These are also used as manures.

Harmful:

1. Some algae which grow in ponds are harmful for other organisms.
2. Algae born in water tanks make water unsuitable for drinking.

5.3 PROTOZOA (ORGANISMS LIKE AMOEBA)

Protozoa is a single cell organism which has specific characteristic for organisms. These can move from one place to another. They can catch their food and eat it. Amoeba is an example of protozoa. This is found on pond water or in dirty water. It lives in pot holes too. This organism can expand its cell is called Pseudopodia. This organism can move from one place to another. This helps them in catching their food. There are 1000 species of protozoa. Some protozoa bore diseases like parasites of malaria which causes disease in our red blood cells after reaching them.

Fungus (fungi like organisms)

Fungi look like plants but they don't have chlorophyll. Two types of common fungi are fungi found on bread or fruits and fungi found on mushrooms or dirty and moist places. Fungi cannot make their own food but they absorb the juice of the rotten things where they are born.

Fig. 5.4 Mushroom

These are single cell organisms (example- feast) and multi-cell (example-mushroom) and basically grow in dark, lukewarm and wet place.

Most of the fungi are harmful but some mushrooms make tasty food.

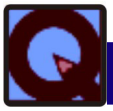
Useful and harmful:

Useful

1. Some fungi is uses to make food and liquid objects. Yeast makes bread. Khammer is used to make idli, dosa etc.
2. Some mushrooms are eaten but most of the mushrooms are poisonous.
3. Some of the fungi are used to make penicillin or vitamin b.
4. Fungi decompose dead plants and elements in nature. They help in the circle of elements.

Harmful

1. Some fungi give disease like irritation or rings.
2. Some fungi harm wheat or barley.



INTEXT QUESTIONS 5.1

1. Fill in the blanks:

   i. Algae are plant like organisms and they have ___ and ____ in cell with difference of cells in organism.

   ii. _____ are found in stopped dirty water is the smallest protozoa.

Notes

iii. Amoeba moves with structures called _____.

iv. Most of the fungi are protozoa but ____ named fungi is eatable.

5.4 PLANTS

Look around you. You will find three types of plants:

1. Grass - grass and grass related plants are mostly seasonal like carrot, radish etc., 2. Shrubs - some plants stem come out as branch on earth and live for many years Like rose, hibiscus etc., 3. tree - a thick and long bark of wood which has many branches like neem, mango, bunyan etc.

There are two important organ system of every plant - root system and shoot system. Let us know about the parts of plant. For example, we take mustard plant. The basic structure of very plant is almost the same; the difference will be of colour, form, shape of leaves, colour of flowers and shapes of fruits etc.

If there have been no green plants then humans and animals cannot love. Plants make their own food with sunlight.

Let us see the tip to root part with the help of a mustard plant.

Parts of plant

1. Root system- this is the part below the land.
2. Primary root - comparatively the thicker part in the mid of the plant.
3. Secondary roots - these are numerous thin roots coming out of primary root. They absorb water and mineral salts from soil to the plants.

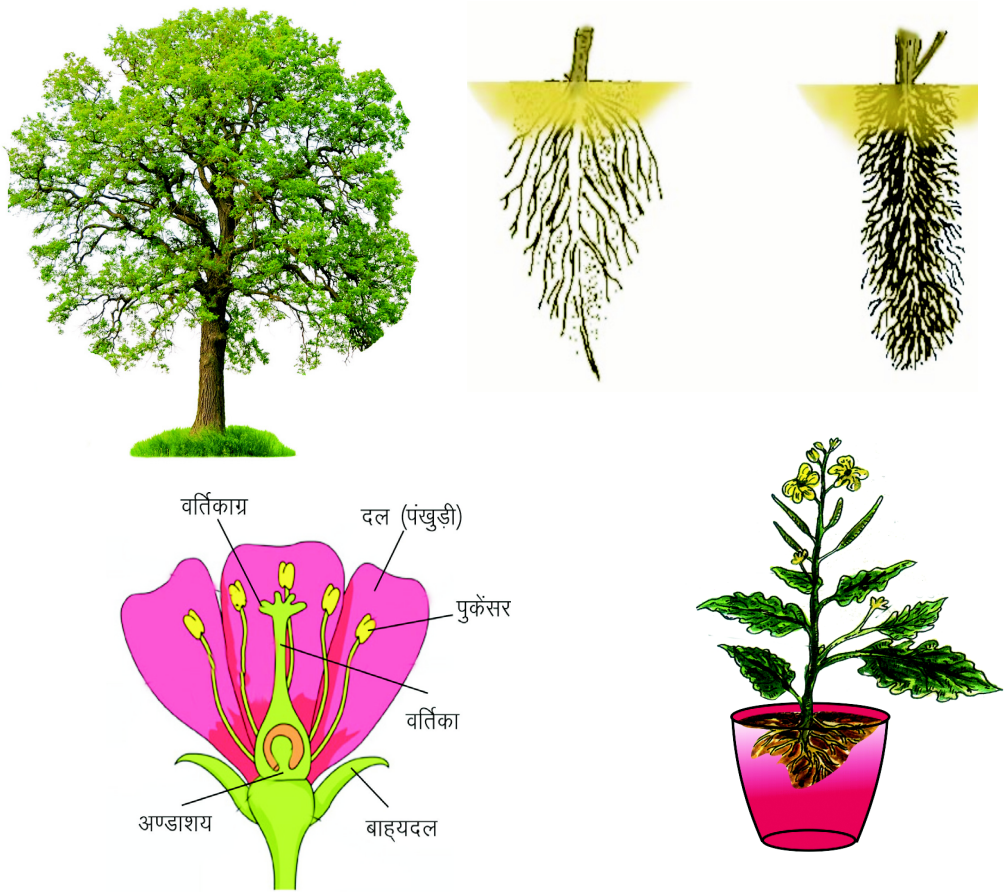


Fig. 5.6 various parts of the plants

(a) Root system

Seeds are sown in soil. First of all, parts related to roots come out in plants. The primary roots provide water and mineral to plants. They are divided into two parts.

There are four main characteristics of roots:

1. Roots always grow below the soil
2. They always move towards water.
3. Roots always move towards light.
4. Roots don't have green colour.

There are two important works of roots:

1. Fixing plant - they make plant stable and straight on land.
2. absorb - they absorb water and mineral salt from soil and provide nutrition to plants.

Roots do many other works in special plants - they store food in some plants like carrot, radish, turnip, beetroot, sweet potato etc. some new plants also grow from the roots of other plants. Example - dahlia.

(b) shoot system - part of the plant above the soil

1. stem - it is that part of plant which is above the soul.
2. Stamen - this is the part of plant above the soul having branches, leaves, fruits and flowers.
3. bark/trunk: the middle part between two stamens.
4. branch: secondary stem coming out of main stem.
5. leaves: these are thin and sharp mostly green coloured part from where plants prepare their own food.
6. branch point: last end of stem and branches having small and numerous leaves.
7. flower: part of plant which is most colourful.
8. fruit: this part is developed in fruit and many new plants grow from there.

Let us know more about these stem or trunk.

Part of the plant above soul is called stem or trunk. This is the most important part of shoot system with stamen, buds, leaves etc. Most of smaller parts have soft and green stem which move easily. Shrubs and trees have stem or trunk method made up of tough and hard wood. The outer surface of wooden stem has bark.

Functions of stem:

1. Gives support: trunk supports branches, leaves, fruits and flowers.
2. Carrying- they carry absorbed water and mineral salts to leaves.
3. Storage of food- they transport food prepared by leaves to the stem or trunk of the plants.
4. Some of the plants transform, their bud into long green leaves like structure, thework of these leaves like structure is to do the work of photosynthesis. Example- nagfni, cactus etc.

INTEXT QUESTIONS 5.1

1. State whether the following statements are true or false:
   i. Stamen is that part of stem from where leaves fall out. ( )
   ii. Primary roots are developed from seedlings or seeds. ( )
   iii. Turnip is a transformed trunk. ( )
   iv. Green stems like nagfani's stem can prepares their food using stems. ( )

b. leaves

Leaves are green colored thin and long structure from stem. This part of plant has different shapes. Leaves make food for plants. This process is called photosynthesis.

Functions of leaves

1. Light (mostly sunlight) is required by the plants with carbon dioxide and water to prepare their own food.
2. Extra water on leaves depict the water inside the plants which get out in form of steam and small holes (stomata) in leaves.
3. Plants take oxygen present in the air inside with the help of leaves.

c. flower

Flower are also present in the stem of the plant. Flowers are the reproductive organ of plants,

Functions of flower

1. Reproduction - the main function of flower in nature is reproduction. Fruit is made inside the flower seeds. Seeds are also built in flowers from where new pant grows.
2. Smell and beauty: flowers are beautiful and have a good smell. They also take part in reproduction. They attract insects and birds to sit on the, they suck juice from flowers and pollen stick to their bodies. The pollen grains falls in other flowers when they go and sit on them. This leads to the starting of fruit from flowers.

Importance of flowers for humans

1. Fruits are made from flowers which we eat.
2. flowers look beautiful in garden and at homes
3. People give each other flowers as a mark of respect. Example - gajra or garland. Flowers are also used in prayer for gods and goddesses.
4. Bees make honey from flowers which we eat.
5. Scent is also prepared from flowers.
6. Clove is a flower which is used as spices and medicine.

Parts of flowers

A common flower when cut from between can be seen like this:

1. Bud - that part on which flowers are kept.
2. Anther - that part of bud which is open and has petals on it.
3. Sepal - there are commonly green coloured leaves which make the outer part of the flower. The main function of sepal is to protect flower in bud stage.
4. Petals - there are basically shining, colorful and open flower. This is the mostly seen upper part of the flower. The main function of this part is to attract insects on flowers.
5. Stamen - these are thread like long parts which has flower like structure, this is the male part of the flower.
6. Pistil - this part is in the centre of the flower and is the reproductive part of the flower.

d. fruit

Fruits are made from flowers. Mango, jamun or java plum, pomegranate, strawberry etc are fruits and tomatoes, cucumber etc are included in vegetables are also fruits; there is a seed present inside the fruit. For example - mango and tomato gas more than one seeds.

Parts of fruit

To learn more about the structure and parts of fruit we take mango as an example. There are two main parts of fruit:

1. The centre part is a tight seed in the fruit.
2. Outside the thick art of the fruit has been divided in many such categories like upper peel, seed plum, and the part related to internal seed.

Groundnut s also a type of fruit and its upper part is completely dry.

Functions of fruit

1. protects the seed - fruit protects the seeds from wear -tear and also from adverse seasons like dryness summer, winter etc.
2. Attract organisms or scattering of seeds - seeds are eatable and tasty. Due to this reason buds, animals and organisms move from tree to tree. Wherever they eat, they scatter the seed and this helps in growing up of plants at different places.

INTEXT QUESTIONS 5.3

1. What is the name of thick part which keeps fruit straight?
2. What is the name of green structures on the outer part of flower?
3. What do we get from fruits?

WHAT HAVE YOU LEARNT

- Bacteria are the simplest and smallest organism found on earth.
- Algae is a green colored single cell organism found in water, it has a cell membrane and chlorophyll. It is a single cell organism.
- Fungi are common chlorophyll microscopic organisms. Some fungi are big also.
- Plant has a root and shoots system.
- Roots always grow below the soil. Roots are of two types - joint roots and fiber roots,
- The function of roots is to keep plant stable, absorb water and minerals from soil and providing food to the upper stem and branch etc. Roots of some plants store food and roots of some plants also make new plants.
- Stem has anther and stamen.. There are leaves in anther. Leaves make food for the plants with the process of photosynthesis.

- Flowers are the reproductive parts of fruits, the main parts of flowers (from outside to inside are) bud, petals, stamen and pistil.
- Petals give protection to bud. They attract insect etc because of their colour. Stamen produces pollen which moves to pistil to make fruit.
- Fruit provides protection to seeds.
- Fruits can be dry (like groundnut) or fiber (like mango). These are the two types of fruits.
- Fruits are tasty and attract insects. They eat and scatter seeds for plant scattering.

TERMINAL QUESTIONS

1. State whether the following statements are true or false:

   i. Bacteria are the smallest and simplest organisms found on earth. ( )

   ii. Some bacteria alive in the basic roots and plants and help in nitrogen fixation for the plants. ( )

   iii. Milk gets destroyed and potato and fruits get rotten because of algae.

   iv. Algae plants are those organisms which do not have cell membrane and chlorophyll. ( )

   v. Algae cannot be eaten as food. ( )

2. Answer the following question in one word:

   i. upper part of plant above soil

   ii. Middle plant between two stamen

   iii. that part which holds leaves to stem

3. Answer the following questions briefly;

   i. Give 4 uses of bacteria.

   ii. Write any two uses and harm of algae.

   iii. Tell any 4 uses of fungi.

   iv. What is the main function of leaf?

   v. What is the main work of stem?

   vi. Write the names of various parts of plants in sequence from outer side to inner side ?

   vii. Write the functions of flower?

ANSWERS TO INTEXT QUESTIONS

5.1

1. 0- 100 micron
2. Cell membrane, chlorophyll
3. Amoeba
4. Mushrooms

5.2

1. true
2. false
3. true
4. false

5.3

1. Bud
2. Veins
3. Bud