

Science Notes

Cells

The cell is the basic unit of structure and function of all living things. Cells work together to perform basic life processes that keep an organism alive (movement), breathing, feeding, reproducing, excreting (growth). All cells have similar parts. However, plants cells have a cell wall and chloroplasts which contain chlorophyll. These are not present in animal cells. The parts that are common to both plant and animal cells are nucleus, cell membrane, cytoplasm, and vacuole.

The nucleus controls the activities of the cell. It is also known as the control and the brain of the cell.

The cell membrane holds the parts of the cell together. It also separates the cell from its surroundings and controls what material enters and leaves the cell. The cell membrane lets, food, oxygen, and water flow into the cell when they are needed, and it lets the cells waste flow out.

Cytoplasm is a colourless, jellylike substance containing many chemicals to keep the cell functioning.

The vacuole stores food, waste and water.

The cell wall (only found in plants) is a stiff outer layer that protects the cell and gives it shape.

Chloroplasts contain chlorophyll that plants need to make food. Without chlorophyll, the plant will die and would not be able to make its own food.

Sponges

Sponges are marine animals. Sponges are invertebrates. They usually remain anchored in one place all their lives. Sponges are filter feeders. They filter tiny particles of food from the water. A sponge has only two layers of cells. The outer covering of the sponge's body is covered with tiny holes called pores. These pores lead to canals which are made up of specialized cells with whip like structures that beat rapidly. This motion helps pump purified water into canals. Thread-like structures remove the tiny pieces of food from the water. The water then flows out through an opening called a vent. Sponges have needle-like parts that give them shape. Sponges reproduce by budding, where they grow a new sponge on them. Once the new sponge grows big enough, it falls off. Some sponges reproduce sexually, forming egg and sperm cells. A fertilized egg forms a larva that leaves the parent sponge and travels through the water to another part of the ocean floor. There, it attaches itself to a hard surface where it develops into an adult sponge. Different species of sponges have different colours, shapes and sizes. Sponges are found on reefs in The Bahamas. At one time, Bahamian fishermen harvested sponges, which were sold to foreign countries where sponges were processed into a variety of household items that could be used for decorations and bathing. The sponging industry was started by the Greeks. At that time, the sponging industry was the most important economic activity in The Bahamas.

Digestion

Our body needs to break down the food we eat to absorb the nutrients it needs. This process is called digestion.

Digestion happens in the digestive system, which begins in the mouth and ends at the rectum.

1. Digestion begins in our mouth. Our teeth cut and chew our food. We use our tongues to taste and to mix food with saliva.
2. The food travels down the esophagus to the stomach.
3. In the stomach, the food mixes with gastric juices. Gastric juices break the food down.
4. The mixture of food and gastric juices travels through the small intestine. Nutrients from the food are absorbed into our blood to be transported to all the cells of our bodies.
5. The parts of the food our bodies do not need continue into the large intestine.
6. Finally, the parts of the food our body does not need leave our body through the rectum.

Caring for the Digestive System

- eat right and on time; - consume protein and carbohydrates in right amount; - drink plenty of water; - exercise; - avoid sugary drinks, and less drink less alcohol; - avoid foods that contains high fat or you will develop constipation problems; - quit smoking, for it contributes to digestive problems such as heartburn, ulcers and gallstones.

Teeth

Our teeth help us chew food, which their main job. Our teeth also help us to digest food, to speak, give shape to the face, smile, and effect our health overall. The doctor that studies the teeth is called a dentist. Since your teeth help break down the food you eat, they are part of your digestive system. The

part of the tooth that can be seen which is not covered by the gum (the pink, fleshy part) is called the **crown**. The crown of each tooth is covered with enamel. **Enamel** is a very tough substance that is hard and shiny and protects the tooth. Beneath the enamel is **dentin**, which is the final protective layer before reaching the pulp. The **pulp cavity** is where the nerves and blood vessels are located. Since teeth are such important tools, humans get two sets. Our first teeth start to grow when we are just 6 months old. They are called primary teeth (milk teeth). These are the teeth that fall out when we grow. This first set contains 20 primary teeth. By the time you turn 12 or 13 years old, all your primary teeth will have fallen out. The second set of teeth that replace the primary teeth is called permanent teeth. • Adult humans have 32 permanent teeth, which are 12 more than the first set of primary teeth. If an adult loses a permanent tooth, it will not grow back.

Types of teeth

- **Incisors** are shaped like tiny chisels with flat ends that are somewhat sharp. These teeth are used for cutting and chopping food.
- The pointy teeth beside your incisors are called **canine** teeth. There are four of them: two on top and two on the bottom. Because these teeth are pointy and sharp, they help tear food.
- Next to your canine teeth are your **premolars**, which are also called bicuspid teeth. You have eight premolars in all: four on top and four on the bottom. Premolars are bigger and stronger, and have ridges, which make them perfect for crushing and grinding food.
- If you open your mouth wide, you'll see your **molars**. You have eight of these: four on top and four on the bottom. Molars are the toughest of the bunch. They are even wider and stronger than premolars, and they have more ridges. Molars

work closely with your tongue to help you swallow food. The tongue sweeps chewed- up food to the back of your mouth, where the molars grind it until it's mashed up and ready to be swallowed.

- The last teeth a person gets are wisdom teeth. These are also called **third molars**. They are all the way in the back of the mouth, one in each corner.

Caring for your teeth:

- Brush and floss your teeth regularly.
- Use fluoride toothpaste. Eat a healthy diet.
- Visit your dentist regularly for dental cleanings and check-ups
- Do not smoke.
- Avoid eating sugary foods. Sugar can hurt your teeth, causing tooth decay and cavities.
- Brush your teeth to avoid bad breath, gum disease (**gingivitis**), and tooth infection and loss of teeth. If you do not brush your teeth, bacteria will develop, clumping together to form a sticky substance called **dental plaque**. Antibacterial mouth rinses also can help reduce bacteria.

From Flower to Fruit

Most of the plants that we are familiar with are flowering plants. **Another name for flowering plants is angiosperms.** All flowering plants produce seeds. The seeds are produced by flowers. Flowers are an adaptation that is important to the success of angiosperms.

The main parts of a flower are the sepals, the petals, the pistil and the stamens.

- **The sepals are the green leaves that protect the flower while it is in the bud.**
- **Petals are the colourful parts that surround and protect the male and female parts of the flower.**
- **The pistil is the female part of the flower.** The female part of the flower produces the fruit and seeds.

- The stamen is the male part of the flower. The male part produces pollen.
- Flowers help to ensure that pollen from the male part of the flower gets to the female part of the flower. This process is called pollination.

Pollination is the first important step in seed formation. A pollinator is an organism that transfers pollen from the male part of the flower to the female.

- Seeds have very tiny plants inside them (seedlings). These grow into new plants and ensure that the group continues to survive.
- The fruit protects the seeds and provides them with food and minerals to produce a protective coat called the seed coat.
- When seeds are mature, the fruit ripens. Animals eat the fruit and scatter the seeds. This allows the seeds to grow into new plants in different places. The changes that occur from the time a seed grows into a new plant until that plant produces seeds make up the life cycle of a plant.