SCIENCE

COMPARISON OF PLANT AND ANIMAL CELL

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As you know, plant and animal cells have a lot of differences as well as similarities. They both can be differentiated on the basis of the presence of organelles in them. However, both of them are eukaryotic cells. Because both plants and animals have eukaryotic cells, their cell structures are quite similar. Each eukaryotic cell is made up of a plasma membrane, a nucleus, cytoplasm, ribosomes, and mitochondria. Nonetheless, there is quite a lot of difference between plant cell and animal cell. The most distinguishing components between them are wall vacuoles, chloroplasts, size and more. Thus, this article aims to give you an idea of their definition, differences and more details to get a better understanding.

DEFINITION OF PLANT CELL

Kingdom Plantae majorly comprises of multi-cellular eukaryotes living things that are autotrophic by nature. Moreover. The organelles in plant cells such as chloroplast, cell wall, vacuole, helps in differentiating them from animals cells. While there is a huge amount of plant species that have not been discovered yet, the ones identified are around 400,000 in number.

Generally, the range of plant cells will vary from 10-100 μm in size. Plant cells are responsible for performing the function of photosynthesis. As a result, we refer to green plants as autotrophs. It is done due to the presence of chlorophyll in the chloroplast of the plant cells. Cellulose makes up the cell wall that offers support and rigidity to the cells.

FUNCTIONS OF PLANT CELL

Plant cells are the fundamental building blocks of plant life, performing all of the processes required for survival. Photosynthesis is the process of converting light energy, carbon dioxide, and water into food. It occurs in the cell's chloroplasts. The following are some examples of specialised plant cells:

1. **Collenchyma Cells –** Collenchyma cells are made up of elongated living cells with irregular main thick walls. They can change shape and grow in the same way that plants do. The fact is that collenchyma is exceedingly plastic i.e. the cells can stretch and so respond to greater organ growth—is a significant trait.
2. **Sclerenchyma Cells –** The cells of the sclerenchyma are stiffer. They are the primary sustaining cells in plant regions that have stopped developing. Mature sclerenchyma cells are often dead cells with thickened secondary walls. They also have a high cellulose content (60–80%) and serve the purpose of giving structural support to plants.
3. **Parenchyma Cells –** The simple permanent ground tissues that make up the majority of plant tissues, such as the soft component of leaves, fruit pulp, and other plant organs, are known as parenchyma. They are present in leaves and perform photosynthesis, cellular respiration, and metabolic processes. They also store chemicals such as carbohydrates and proteins and aid in plant healing.
4. **Xylem Cells –** This tissue aids in the transfer of dissolved chemicals and water throughout the plant. Tracheids, vessels, xylem parenchyma, and xylem fibres are examples of xylem components. The xylem transports water and dissolved minerals from the roots to the leaves of the plant.
5. **Phloem Cells –** It delivers nutrients produced by photosynthesis to all areas of the plant. Sugars and amino acids dissolved in water are transported by phloem. The phloem transports nourishment from the leaves to the roots.

DEFINITION OF ANIMAL CELL

The Kingdom Animalia takes up the three-fourth part of all the species on the planet earth. The human body is made up of 10^{14} cells, and their size varies from 10-30 μm in diameter. Animal cells do not consist of the cell wall and chloroplast and that mainly differentiates them from the plant cells. The primary

distinction between animal and plant cells is that animal cells cannot produce their own nutrition. The nucleus, cell membrane, and cytoplasm are the three primary components of most animal cells.

There's a belief that the cell walls disappeared with the evolution which resulted in the development of animal cells with the more advanced cells, tissues, and organs that are more specified in their operation. Thus, nerves and muscles assist in locomotion, mobility and performing other functions as well.

FUNCTIONS OF ANIMAL CELL

All of the cells work together in harmony to help the organism survive. The collection of comparable tissues will form the various organs of the body such as the heart, lungs, and so on, and these organs will collaborate to make the organ system such as the neurological system, digestive system, circulatory system, and so on. A few types of animal cells are:

1. **Skin Cells –** These cells can be found in the dermal and epidermal layers of the skin. These cells are effective at preventing water loss and providing a barrier to the external environment.

2. **Bone Cells –** Bone cells are responsible for the formation of an animal's skeleton and bones. Bone cells communicate with one another to maintain balance and, ultimately, control bone structure and function. They also assist with body movement.

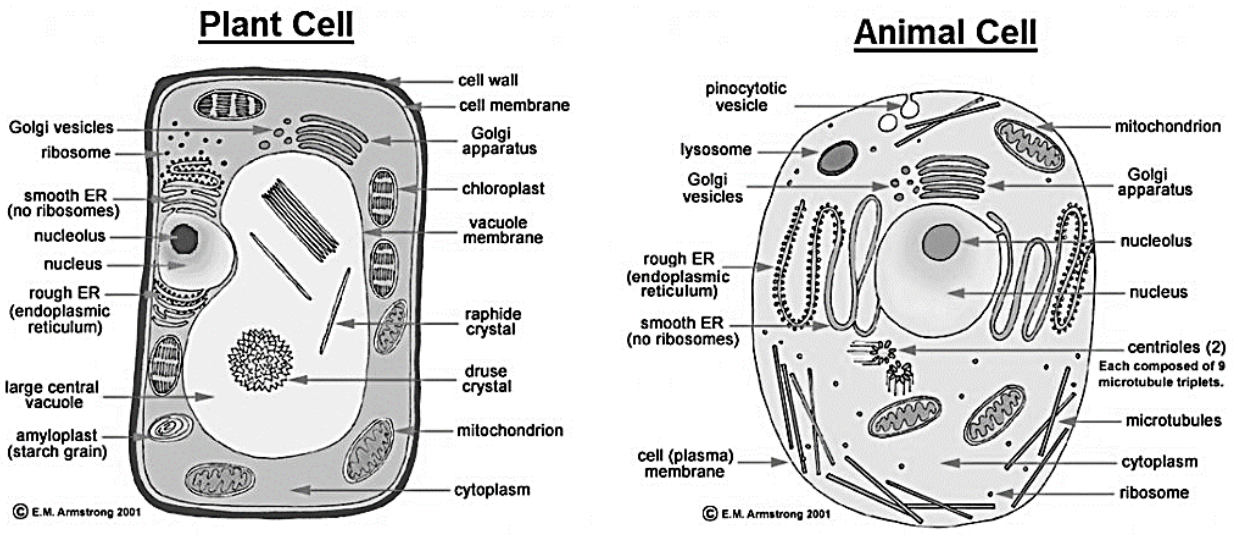
3. **Muscle Cells –** It aids in the protection of the body's delicate organs. They can help to organise the movement of your limbs and tissues when they are clustered together.

4. **Blood Cells –** These cells serve as the body's transporters, carrying hormones and nutrients. They transport oxygen throughout the body via the bloodstream.

5. **Nerve Cells –** These are specialised cells that are programmed to transmit impulses or information. Neurons, also known as nerve cells, are brain cells that send and receive

messages. The cell body, which includes the nucleus, a primary branching fibre (axon), and numerous smaller branching fibres comprise each nerve cell (dendrites).

Difference between Plant Cell And Animal Cell



MORE DETAILS ABOUT PLANT CELL

There are different types of plant cells. They are parenchyma, collenchyma, sclerenchyma, water-conducting cells, and sieve-tube members. Parenchyma store organic products whereas collenchyma offer structural support to the cell.

Sclerenchym's cell wall is embedded with lignin. Water Conducting Cells helps in transmitting water from roots to other parts of the plants. Finally, Sieve Tube Members helps in transporting food and nutrients.

MORE DETAILS ABOUT ANIMAL CELL

Animal cells are also of different types. They are skin cells, bone cells, muscle cells, blood cells and nerve cells. Firstly, skin cell helps in protecting the internal parts and prevents the loss of water. After that, bone cells make bones and skeleton of animals and offer structural support and help in movement.

Further, muscle cells help in protecting the delicate organs of the body. Moreover, blood cells carry hormones and nutrients in the body. Finally, we have nerve cells that send impulses or information to help the body connect and perform actions.