

## The plant cell

Is a unit of the construction and function of the plant and is characterized on the walls contain cellulose, gave wall recipe being dead isn't live, and the cell is generally composed of two main components, namely:

1- Cell Wall

2- Protoplast

Which consists of living components and non-living components

• **And the composed of the living components cell from the following.**

1- Cytoplasm

2- Nucleus

3- Plastids

4- Mitochondria.

5- Endoplasmic reticulum.

6- Dictyosomes .

7- Golgi bodies .

• **And the non-living components Includes of the cell in addition to the cell wall**

Vacuole , starch granules, the granules protein, fat droplets and crystals .

## - **The Cell wall**

The Wall described in the plant cell as a wall dead have features a cellulose devoid of them non-plant cells, and its form as a result of the activity of protoplasm where evolve into cellular plate and as soon as they met the walls of the cell mother turns into what is known as Middle Lamella, and in general cell wall consists of three layers are :

### 1- **Middle Lamella**

Also called "Article interfaces that are joining the two magistrates walls that connected by it," and basis Consists of Middle Lamella is the Pictet Al- calcium and Almgunsoam, but it may contain other substances such as: Lignin as the carrier elements in wood.

### 2- **Primary cell wall**

Is the first part of the wall is added by protoplast on the middle Lamella , and consists of primary wall materials Pictet and cellulose and multi-sugars cellulose material and other materials. There are other primary wall in plant cells may remain only in the cell wall, as in the case of Meristematic cells and most Parenchyma cells and cells Collenchyma and Most epidermis cells.

### 3- Secondary cell wall

Layer is added with the wall primary characterize some of the tissue, and consist in addition to the primary wall components of the subjects AL-Suberin and lignin , the study of it can be clearly in Parenchyma cells in the wood, fabric cork, Sclerenchyma such as fibers and stone cells , the carrier elements in wood such as vessels and Tracheid's in some Epidermis layers , such as those in conifers and permanent plants.

- **Plasmodesmata**

It Protoplast filaments linking between Protoplast cell and Protoplast adjacent cell, and pass through the primary clicking fields in the primary wall, they are carrier material between adjacent cells so it believed to be that a channels between adjacent cells.

There are several evidence that these compositions real live have Protoplast nature , including:

1. presence in the walls of the living cells and not presence in the walls of dead cells.
- 2- these structures Similar to the another cytoplasm , where the tendency of pigmentation dyes own cytoplasm.
- 3- given positive interactions with oxidative enzymes like cytoplasm .

4- When the cell was protoplasmic, cytoplasm will away from the walls except some certain areas of the wall where the cytoplasm remains associated with these areas represent the position of the passage of plasma links.

- Found in a lot of low-lying plants, including ferns also found in all living cells.

For its function, they inflame an important role in the transfer of water and other materials from Protoplast cell to another.

## **The plant cell and its Components**

The plant cell are composite from protoplast and cell wall, the protoplast distinguish that its contain the living and non-living components.

### **The living components of the protoplast plant cell**

#### **1- Nucleus**

It is an important member of the cell containing the nucleic acids of that will form the genetic that represent as Chromosomes that will doing the process of transfer of genetic traits in organisms, and in general, organisms can be divided into two types.

## **A- Prokaryotes**

In this type the genetic material isn't surrounded by a distinctive wall inside the cytoplasm, for example: Bacteria and green algae.

## **B- Eukaryotes**

In this type the genetic material is surrounded by a special and distinctive wall inside the cytoplasm and the Eukaryotes differ by size and shape and location depend on the state of cell and tissue distinction, it may be spherical shape in permanent tissue and it be elongated ellipse in the other tissue, mostly they the cell contain one nucleus and the nucleus contain the amino acid and nucleolus.

## **2- Plastids**

Its protoplasmic organelles are important in the plant they are surrounded by a special membrane, can be discriminated into three types:

### **A- Chloroplasts**

And can be seen clearly in the green plant leaves in green tissue paper and also observed in some types of tissue parenchymes. In the crust layer of legs, some plants their shape varies depending on the cells shall be helical or asterisk or granules or disc in algae, either in higher plants shall be

Cubane shape and the most important it is the function of photosynthesis.

### **B- Chromoplasts**

And can be studied in tomato fruits, either they function to protect chloroplasts, and attract insects to help in pollination.

### **C- Leucoplasts**

And is located in parts not exposed to light, such as roots, which is colorless and their functions are starch composition, such as potato tubers.

### **3- Mitochondrion**

### **4- Ribosomes**

### **5- Endoplasmic Reticulum**

### **6- Cytoplasm**

### **7- Golgi apparatus**