

Lab 6- Plant tissue

Tissue :Group or masses of cells that are alike in origin ,Structure and function .Tissues classified in to

1-**Meristematic tissue** : Consists of a group of immature cells which remains in a continuous state of division .The cells may be rounded, oval or polygonal in shape, they are always living and thin- walled usually the intercellular spaces are not found among these cells

2-**The permanent tissue** : These tissues derived from the meristematic tissues but their cells have lost the power of division & have attained their definite forms. Permanent tissues are classified into two-simple & complex.

Simple permanent tissue -these tissues are composed of cells which are structurally & functionally similar. Thus, these tissues are all made of one type of cells. They are of three types-

Parenchyma

Collenchyma

Sclerenchyma

1-Parenchyma is the most common tissue in ground tissue systems .It comprises most of a plant's soft primary growth .Cells are pliable , thin walled , and many sided .Its cells are metabolically active at maturity and retain the capacity to divide , as in wound healing .Various types of parenchyma participate in photosynthesis , storage, secretion , and other tasks .Mesophyll is a type of parenchyma that contains chloroplasts

2-Collenchyma cells are thickened and help strengthen the plant. Cells are specialized for support for primary tissues .The cells are elongated .with walls (especially corners) thickened with pectin , pectin makes stems strong but pliable

.Collenchyma cells are alive at maturity .The strinfs in celery are good examples of collenchyma .

3-Sclerenchyma supports and protects mature plant parts .It protects many seeds .Sclerenchyma cells have thick, lignified walls and are dead at maturity. Lignin is deposited in its cells where it anchors , waterproofs , and protects .There are tow types of sclerenchyma .Fibers and sclerids ,fibers are long tapered cells .Scleraeids are stubbier cells .Long tapered fibers flex and twist and therefore are useful in making rope .

Complex permanent tissue -the complex tissues consist of more than one type of cells. All these co-ordinate to perform a common function. Complex tissues transport water, mineral salts(nutrients) & food material to various parts of plant body. Complex tissues are of following two types :

Xylem

Phloem

Xylem & phloem are both conducting tissues & also known as vascular tissues; together both of them constitute vascular bundles.

- **xylem** is a vascular & mechanical tissue. In other words, it is a conducting tissue. Xylem is composed of cells of four different types: tracheid's; vessels or tracheae; xylem parenchyma; xylem sclerenchyma. Except xylem parenchyma, all other xylem elements are dead & bounded by thick lignified walls. Of these four types of cells of xylem, most important cells are vessels. Vessels are very long tube-like structures formed by a row of cells placed end to end. Tracheid's are elongated cells with tapering ends. They conduct water

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The main function of xylem is to carry water & minerals salts upward from the root to different parts of shoots. Since walls of tracheid's, vessels & sclerenchyma of xylem are lignified, they give mechanical strength to the plant body.

Phloem like xylem, it contains tubes but has no mechanical function. phloem is composed of following four elements or cells. 1.sieve tubes; 2.companion cells; 3.phloem parenchyma & 4.phloem fibers .

Functions-phloem transport photosynthetically prepared food materials from the leaves to the storage organs & later from storage organs to the growing regions of the plant body.