

PLANT ANATOMY Lecture 11 - (Mechanical) Sclerenchyma

NOTE: "Conducting sclerenchyma" (according to James D. Mauseth) is known as xylem. There are two kinds called tracheids and vessels...we'll talk about them later. For now, its **MECHANICAL SCLERENCHYMA**

- I. General characteristics of sclerenchyma ("hard" tissue)**
 - A. Sclerenchyma and collenchyma are principal supporting tissues**
 - 1. Collenchyma function in support
 - 2. Sclerenchyma function in strength
 - B. Sclerenchyma have thick secondary walls (with simple pits)**
 - 1. Secondary walls formed by inclusion of lignin into the CW matrix
 - C. Where secondary walls can be found**
 - 1. Sclerified parenchyma - as transfer cells
 - 2. Xylem - vascular bundles
 - 3. Sclerenchyma - scattered among other cells
 - C. Dead at maturity**
- II. Types of sclerenchyma**
 - A. Fibers (long, slender, and unbranched)**
 - 1. Occur as isolated strands or cylinders around vascular bundles
 - 2. Sclerenchyma fibers provide a rigid support
 - 3. Variable in appearance; function is difficult to determine
 - 4. Can occur to the outside of the phloem
 - a) Referred to as phloem fibers
 - 5. Inside of cell with secondary wall is referred to as the lumen
 - 6. Fibers are common in monocots
 - a) Monocots don't have much secondary growth and thus need support
 - 7. Unlignified fibers
 - a) Secondary walls have only cellulose
 - b) Found in Flax
 - c) In a way, these are like collenchyma
 - B. Sclereids (short and branched)**
 - 1. Frequently found isolated as "idioblasts"
 - 2. Sometimes in stems as a continuous cylinder
 - 3. Leaves are a good source of sclerids (ground tissue)
 - 4. Sclereids found in fruits and seeds (pear fruit)
 - 3. Can have branched pit channels - called ramiform pits