PLANT ANATOMY Lecture 10 - Parenchyma and Collenchyma

I. Location and function of parenchyma ("beside" tissue)
- A. Where it's found
  1. Main representative of ground tissue
  2. Cortex and pith of stems
  3. Cortex of roots
  4. Ground tissue of petioles
  5. Mesophyll of leaves
  6. With xylem and phloem
- B. What it does
  1. Capable of changing function
  2. Can go through resumption of meristematic activity to enable
     - a) Wound healing
     - b) Regeneration
     - c) Adventitious roots and shoots
     - d) Grafts
     - e) Tissue culture

II. Types of parenchyma
- A. Chlorenchyma - photosynthetic (found in leaf mesophyll)
- B. Storage - starch and oil (seeds and fruits); have amyloplasts, chromoplasts, and accumulate stuff in vacuole (anthocyanins, tannins, crystals)
- C. Aerenchyma - have intercellular air spaces (stem, petiole, midrib)
- D. Sclerified - have primary and secondary walls (some seeds; asparagus and persimmon)
  1. Secondary wall is thinner than that of sclerenchyma and is composed of cellulose and lignin
  2. Sclerified parenchyma are alive. They have pits where no secondary wall forms - called a simple pit or primary pit field
  3. If there is a great deal of cell wall ingrowth to increase the surface are of the plasma membrane, it is referred to as a transfer cell (some companion cells)
- E. Secretory - dense protoplast especially rich in ribosomes and dictyosomes (random oil cells - *Magnoliaceae, Winteraceae,* resin cells - *Meliaceae,* muscilagenous and crystal cells - *Cactaceae and Brassicaceae*)

III. Collenchyma ("glue" tissue)
- A. No sub-types
- B. Living at maturity
- C. Have irregularly thickened primary cell walls (composed of cellulose and pectin)
- D. Found just beneath the epidermis
- E. Collenchyma can alternate with chlorenchyma
- F. Can become meristematic or sclerenchyma
- G. Nature of cell wall enables flexible support (plastic)
- H. Function to give support to growing leaves and stems
- I. Roots rarely have collenchyma