

PLANT ANATOMY Lecture 22 - Leaf Venation and Leaf Development

- I. Leaves compared to roots and stems**
 - A. Leaf is build like an umbrella**
 - B. Support comes from the petiole**
 - C. Has a determinant structure - it reaches a size and then stops growing (roots and stems can be thought of as indeterminant)**
 - D. Pattern recognition**
 - 1. Roots and stems - stelar and nodal patterns**
 - 2. Leaves - venation**
- II. Types of leaf venation**
 - A. Lower vascular plants - no minor veins**
 - 1. Open dichotomous - series of equal divisions**
 - 2. Modified open dichotomous - has a midrib**
 - 3. Single midvein - single midvein**
 - B. All flowering plants**
 - 1. Reticulate**
 - a) Craspedodromous - mostly dicots w/ vein endings**
 - b) Camptodromous - mostly dicots w/ vein endings**
 - c) Parallelodromous - monocots without/ vein endings (entire margin)**
 - 2. Venation in dicots follows the pattern: midrib, secondary veins (or first order laterals), tertiary veins (second order lateral), etc., until finest veins encountered**
 - a) Area bound by the finest is referred to as an aereole**
 - b) Minor bundles occur at the aereoles and leads to (or embeds) the mesophyll**
 - c) Xylem may be found as terminal tracheids in minor veins and may extend beyond phloem**
 - d) Phloem, if found in minor veins, have big companion cells (transfer cells)**
 - e) No one knows why vein endings occur**
 - 3. Plants encountered near the equator usually have entire margins - with glands or hydathodes (water-secreting) at the ends**
- III. Connection between leaf and petiole**
 - A. Remember lacunarity? (unilacunar - 1 trace, trilacunar - 3 trace, etc.)**
 - B. Most of the time there is one major bundle**
 - C. There can be localized effort**
 - 1. Compound leaves**
 - 2. Bidirectional leaves**
- IV. Leaf development**

