

GENERAL BIOLOGY Lecture 23 - Plants: General Anatomy

I. Roots

- A. Apical meristem - gives rise to meristematic tissue**
 - 1. Quiescent center - frequency of mitosis is low
 - 2. Proximal meristem
 - a) Protoderm - produces epidermis
 - b) Ground meristem - produces ground tissue (cortex and endodermis)
 - c) Procambium - produces vascular tissue (vascular cylinder referred to as the stele)
- B. Developmental zones of the root**
 - 1. Zone of cell division (meristematic zone) - tip of root
 - 2. Zone of cell elongation (above division zone)
 - 3. Zone of cell differentiation (uppermost - kinda where root hairs are visible)

II. Stems

- A. Primary stem growth in angiosperms - dicots and monocots**
- B. Apical meristem - angiosperms**
 - 1. Shoot apex - point above youngest primordia (lateral outgrowth from apical meristem that will become a leaf)
 - 2. Apical meristem - gives rise to protoderm (dermal), ground meristem (ground), and procambium (vascular)
 - 3. Differentiation of cells
 - a) Dermal tissue
 - 1) Epidermis - covered by a cuticle
 - b) Ground tissue
 - 1) All around procambial strands
 - c) Procambial strand
 - 1) Phloem - outside & continuous
 - 2) Xylem - inside & discontinuous (no immediate need for water)

III. Leaves

- A. Leaf development**
 - 1. Leaf primordia initiated in region of apical meristem
 - 2. Primary meristematic tissue: protoderm (epidermis), ground meristem (leaf mesophyll), and procambium (vascular tissue)
- B. Leaf structure**
 - 1. Epidermis (protective)
 - 2. Mesophyll (photosynthesis)
 - 3. Vascular bundles (xylem & phloem)