

GENERAL BOTANY Lecture 37 - Angiosperms

- I. General information**
 - A. Angiosperms probably arose from gymnosperms**
 - B. Important evolutionary advances of angiosperms**
 - 1. Vegetative - improved vascular system (vessels & companion cells)
 - 2. Reproductive - flowers
- II. Flower structure and physiology**
 - A. Major taxonomic components**
 - 1. Symmetry
 - 2. Numbers - sepals, petals, stamens, pistils (stigma, style, & ovary)
 - 3. Free or united sepals & petals
 - B. Phenomena associated with flower induction**
 - 1. Photoperiodism
 - a) Day-neutral plants - flower independently of day length
 - b) Long-day plants - flower in response to short nights (corn, wheat, and clover)
 - c) Short-day plants - flower in response to long nights (poinsettia, chrysanthemums, Christmas cactus)
 - 2. Circadian rhythm - biological clock
 - 3. Vernalization - cold treatment
- III. Specific reproductive advances**
 - A. Increase in sporophytic generation; less gametophytic**
 - 1. When unfertilized, less effort is made towards reproductive structures
 - B. Enclosure of ovules**
 - 1. Leaves fold and join at the margins to form carpels
 - 2. Carpel walls (fruit walls) mature into a structure that aids in seed dispersal
 - 3. Protection
 - C. Double fertilization**
- IV. Phylogeny (evolution) and classification**
 - A. Phylum Magnoliophyta (formerly Anthophyta)**
 - 1. Subphylum Monocotyledonae
 - 2. Subphylum Dicotyledonae
 - B. Besseyan System**
 - 1. Spiral to whorled flowers
 - 2. Many to few flower parts
 - 3. Hypogyny (Superior Ovary; flower situated sepals, petal, stamens, pistils) to epigyny (parts arise from the ovary (inferior ovary))
 - 4. Regular to irregular flower
 - 5. Three main lines of advance
 - a) Magnoliaceae (magnolia) ==> Rosaceae (roses) ==> Asteraceae (sunflower)
 - b) Magnoliaceae (magnolia) ==> Malvaceae (cotton, okra) ==> Lamiaceae (mints)
 - c) Magnoliaceae (magnolia) ==> Lilaceae (lilies) ==> Graminae (grasses)
- V. Life cycle**