

The Flower, Embryo Structure and Development

1. Mature Flowers (Lab Manual p. 10)

- A. Observe presence/absence of 4 major floral parts
 - i. Lily (monocot, sepals are colored like petals)
 - ii. Magnolia (typical of early, more primitive flowers)
- B. Dissect
 - i. *Agapathus* (Lily of the Nile, colored sepals)
 - ii. Choose 1 or 2 other flower types

2. Floral Development (Lab Manual p. 10-11)

- A. Initiation of floral (inflorescence) meristem
 - i. Cauliflower
- B. Development of floral meristem (Review mature flowers optional)
 - i. Broccoli

3. Embryo Development (Lab Manual p. 11)

- A. *Arabidopsis* (Living Plants)
 - i. Young fruit (~globular embryos from small, purplish fruits near shoot apex)
 - ii. Maturing fruit (~heart-shaped and torpedo embryos from large, but still green fruits)
Note: The brown fruits contain mature seeds that will be too difficult to extract embryos from.
- B. *Capsella* (Prepared Slides)
 - i. Early embryo development
 - a. Globular stage with tissue differentiation initiated, suspensor visible
 - b. "Empty" region surround embryo was liquid endosperm
 - c. Seed coat visible
 - ii. Developing embryo
 - a. More tissue layers become more apparent
 - iii. Mature embryo
 - a. Torpedo stage
 - b. Evident cotyledons, shoot apical meristem and root apical meristem

4. Lettuce Seed Germination Experiment (Review set-up: Lab Manual p. 9)

- A. Count number of seeds germinated out of total seeds in each treatment.
- B. Compare germination rates. Did you see a treatment effect?
- C. Compare growth rates. Did the treatments differ in how elongated the young plants became?

5. Leaves (Not in Lab Manual)

- A. Live material
 - i. Observe the location and distribution of stomata on leaf surface(s)
- B. Prepared Slides
 - i. *Syringa* (Lilac) - single epidermis and palisade parenchyma layer, thin cuticle
 - ii. *Oleander* - Multiple epidermis and palisade parenchyma layer, thick cuticle, stomatal crypts
 - iii. *Iris* - Bifacial leaf, note orientation of xylem tissue