

## Early Development of the Plant Body Chapter 22

### Early Development of the Plant Body

- embryogenesis
- two patterns
  - apical-basal pattern
  - radial pattern
- seed development

### Chapter Outline

- Formation of the embryo
- The mature embryo and seed
- Requirements for seed germination
- From embryo to adult plant

### Formation of the Embryo

- Early embryogenesis same in all angiosperms
  - Polarity established
  - Embryo proper and suspensor
- Primary meristems
  - Protoderm
  - Procambium
  - Ground meristem
- Sequence of developmental stages
- Suspensor supports early development of embryo
- Genes identified that determine major events in embryogenesis

### Mature Embryo and Seed

- Embryo development
  - Continuous nutrient supply from parent plant
  - Monocots vs. eudicots

### Seed Germination Requirements

- Definition of germination
  - Resumption of growth of the embryo

- External factors
- Dormancy
  - Fail to germinate even in favorable conditions
  - Physiological immaturity
  - Impermeability of seed coat
  - To break dormancy

#### From Embryo to Adult Plant

- Primary root (taproot)
  - First structure to emerge
  - Produces branch (lateral) roots
- Cotyledon location in eudicots
  - Aboveground
  - Belowground
  - Most eudicot embryos get food from cotyledons
- Monocot germination
  - Get food from endosperm
  - Cotyledons absorb simple food from endosperm, transport throughout plant

#### Chapter Summary

- Embryogenesis establishes plant body plan
- Mutations disrupt normal embryo development
- Mature embryo
- Seed dormancy
- Establishment of seedling