

# Introduction to Botany. Lecture 35

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1 Questions and answers

2 Magnoliopsida

- Flower



- 1 Questions and answers
- 2 Magnoliopsida
  - Flower



# Previous final question: the answer

What is a double fertilization?



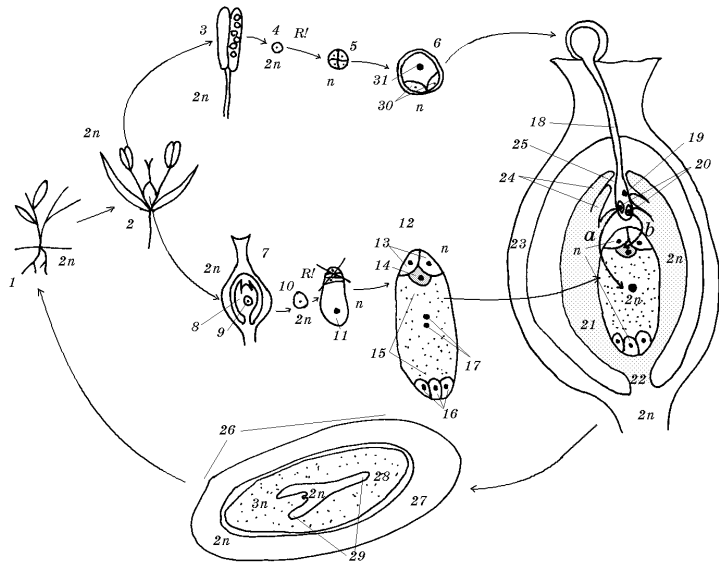
# Previous final question: the answer

What is a double fertilization?

- I. 1st sperm + egg cell = zygote → embryo
- II. 2nd sperm + central cell = endosperm<sub>2</sub>



# Life cycle of angiosperms: another view



# Magnoliopsida

## Flower



# Definition of flower

- Compact generative shoot (= floral unit, FU) with three zones
- Three main zones: sterile (perianth), male (androecium) and female (gynoecium)
- General characters: sex, merosity, symmetry, position of gynoecium



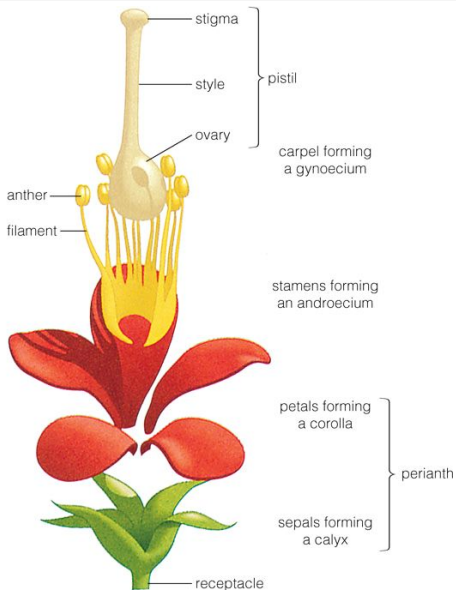


# Structure of flower

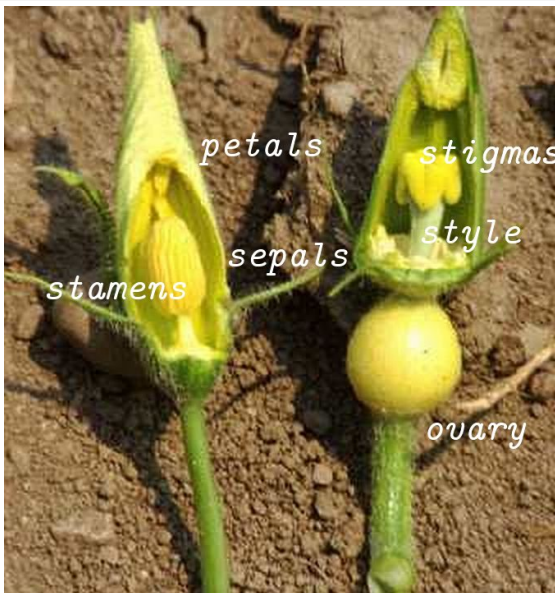
- Perianth
  - Simple perianth (consists of tepals)
  - Double perianth
    - Calyx (consists of sepals)
    - Corolla (consists of petals)
- Androecium (consists of stamens)
  - Filament
  - Anther (consists of pollen sacs)
- Gynoecium (consists of pistils)
  - Ovary (consists of carpels, contains locules and placentas)
  - Style
  - Stigma



# Structure of flower



# Pumpkin (*Cucurbita pepo*) flower



# General characters of flower

- Complete (with all parts) and incomplete (without some parts) flowers
- Sex: staminate, pistillate (imperfect) and bisexual (perfect); monoecious and dioecious plants
- Merosity
- Whorls, connation and adnation
- Symmetry: radial (regular), bilateral (irregular), asymmetry
- Position of gynoecium and ovary: epiginous and hypogynous flowers, or inferior and superior ovary; hypanthium



# Apomixis

- Reproduction without fertilization
- **Apogamy** (i.e., parthenogenesis): embryo develops from unfertilized gamete; sexual reproduction becomes vegetative
- **Apospory**: embryo develops from maternal diploid tissue, without meiosis; here asexual reproduction becomes vegetative



# Pollination

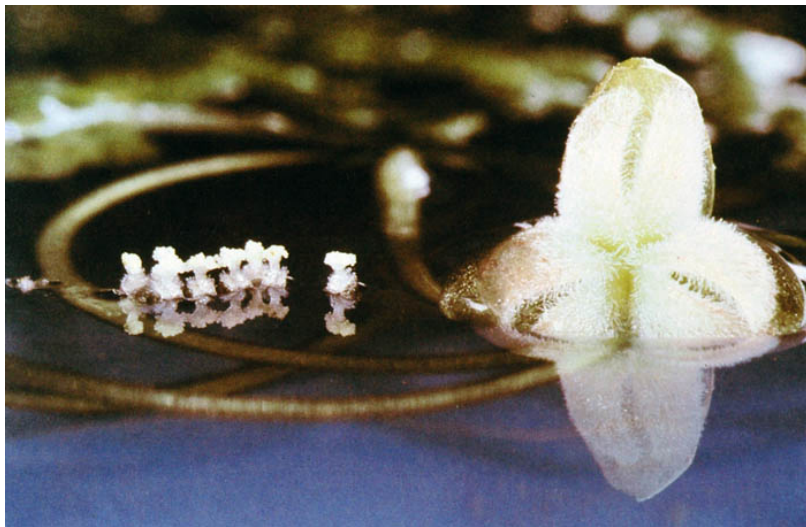
- Self-pollination
- Cross-pollination: abiotic (gravity, wind, water) and biotic (insects, birds, bats, sometimes even possums)
- Every pollination type has associated **pollination syndrome**



# Wind pollination: hazelnut



# Water pollination: vallisneria





# Bat pollination: cacti



# Possum pollinator: Australian Myrtaceae



# Final question (2 points)



# Final question (2 points)

What is a flower?



# Summary

- **Flower** is a compact three-zoned generative shoot
- Three main zones of flower: sterile (**perianth**), male (**androecium**) and female (**gynoecium**)



# For Further Reading



J. E. Bidlack, Sh. H. Jansky.

*Stern's introductory plant biology*. 12th edition.

McGraw-Hill, 2011.

*Chapters 8 and 23.*



Th. L. Rost, M. G. Barbour, C. R. Stocking, T. M. Murphy.

*Plant Biology*. 2nd edition.

Thomson Brooks/Cole, 2006.

*Chapters 13 and 25.*

