Angiosperm Reproduction and Biotechnology

Chapter 38

Angiosperm lifecycle

Angiosperms

- Key derived traits
  - Flowers
  - Double fertilization
  - Fruits

Flowers

Co-evolution

Double fertilization

Seed forms from ovary

Fruit forms from ovary

- Fruits are classified into different types
  - Simple (from one carpel)
  - Aggregate (from multiple carpels in same flower)
  - Multiple (from multiple flowers)
  - Accessory (fruit derived from structure other than ovary)

Seed germination

Plants can reproduce asexually

- Fragmentation
- Adventitious roots
- Apomixis

Adaptations to avoid self-fertilization

- Dioecious (versus monoecious) flowers
- Self-incompatability
Plant cloning

Protoplast fusion

Artificial selection

Genetic engineering

Which of the following is a function of a petal?
A. produces pollen
B. advertises
C. houses the ovules
D. emits pheromones
E. secretes amino acids

The most likely pollinator for a large and creamy white flower with a strong sweet odor would be
A. wind.
B. bats.
C. butterflies.
D. bees.
E. flies.

A flower has a single carpel, a single ovary, and a single ovule. The fruit will
A. be small.
B. be fleshy when ripe.
C. have a single seed inside.
D. be dispersed by wind.
E. be a nut.

Like many plants, the animal kingdom has evolved strategies to force individuals to have sex with other individuals. This maximizes genetic recombination. Having two different sexes in animals is most like ___ in plants.
A. apomixis
B. monoecy
C. incomplete flowers
D. dioecy
E. heterostyly

Bananas are most often propagated asexually. Therefore, one reason they are vulnerable to infection is
A. the offspring remain connected to the parent, so the disease can spread easily.
B. the fungi infect the tools used to cut the connections between parent and offspring.
C. the infection evolved more recently than the banana did.
D. bananas are the world’s most popular fruit, so where bananas can be grown they are everywhere, making it easy for the fungus to be transmitted.
E. bananas are virtually identical genetically, so a disease that can infect one banana probably can also infect other bananas.

Which of the following is gametophyte tissue?
A. stigma
B. pollen tube
C. receptacle
D. anthers
E. nectar

One advantage of asexual reproduction over sexual reproduction is that
A. there is a reduced genome.
B. in variable environments offspring grow faster.
C. in constant environments favorable clones can be rapidly propagated.
D. it increases seed production.
E. it increases diversity.
Angiosperm Reproduction and Biotechnology

Chapter 38

Angiosperm lifecycle

Angiosperms

• Key derived traits
  – Flowers
  – Double fertilization
  – Fruits

Flowers

Co-evolution

Double fertilization

Double fertilization

Seed forms from ovary

Fruit forms from ovary

• Fruits are classified into different types
  – Simple (from one carpel)
  – Aggregate (from multiple carpels in same flower)
  – Multiple (from multiple flowers)
  – Accessory (fruit derived from structure other than ovary)

Seed germination

Plants can reproduce asexually

• Fragmentation
  • Adventitious roots
  • Apomixis

Adaptations to avoid self-fertilization

• Dioecious (versus monoecious) flowers
  • Self-incompatibility

Plant cloning

Protoplast fusion

Artificial selection

Genetic engineering

---

32. **One advantage of asexual reproduction over sexual reproduction is that**
   A. there is a reduced genome.
   B. in variable environments offspring grow faster.
   C. in constant environments favorable clones can be rapidly propagated.
   D. it increases seed production.
   E. it increases diversity.

33. **One major evolutionary advantage that many angiosperms have over gymnosperms is that**
   A. coevolution with animal pollinators enhances reproductive success with less energy expenditure.
   B. sexual reproduction enhances genetic diversity.
   C. flowers are better protected from herbivory when compared to cones or strobili.
   D. they do not possess juvenile (vegetative) phases.