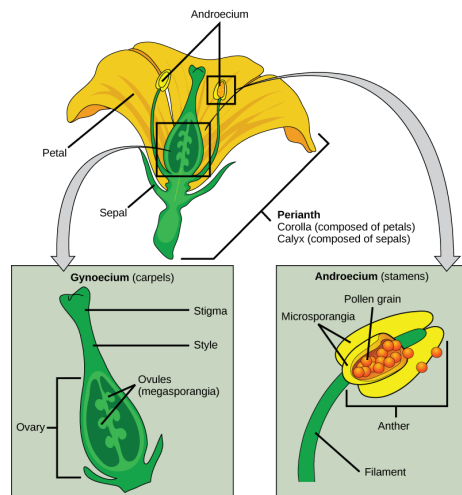


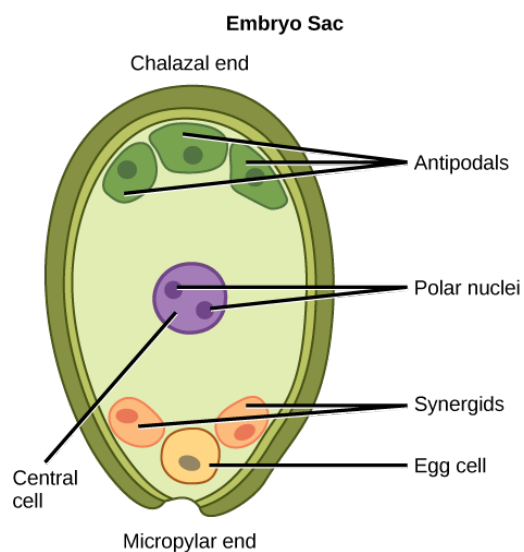
Biology 2eUnit 6: **Plant Structure and Function**Chapter 32: **Plant Reproduction****Visual Connection Questions**

1. If the anther is missing, what type of reproductive structure will the flower be unable to produce? What term is used to describe an incomplete flower lacking the androecium? What term describes an incomplete flower lacking a gynoecium?



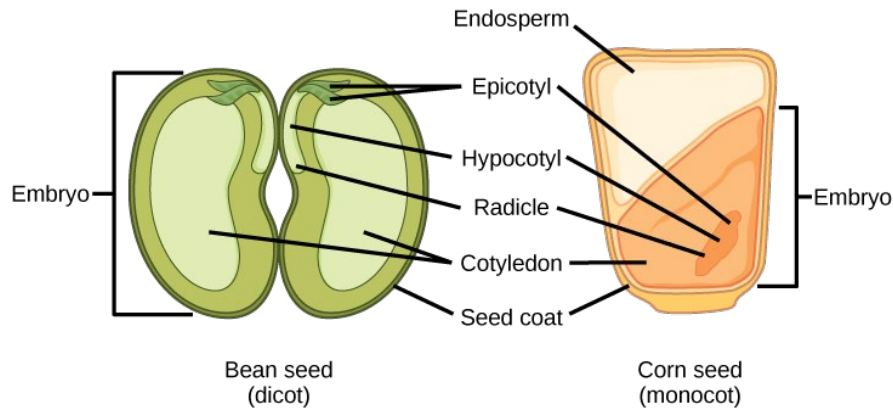
Pollen (or sperm); carpellate; staminate.

2. An embryo sac is missing the synergids. What specific impact would you expect this to have on fertilization?



B: The pollen tube will form but will not be guided toward the egg.

3. What of the following statements is true?



b. the radicle develops into the root.

Review Questions

4. In a plant's male reproductive organs, development of pollen takes place in a structure known as the _____.

b. microsporangium

5. The stamen consists of a long stalk called the filament that supports the _____.

d. anther

6. The _____ are collectively called the calyx.

a. sepals

7. The pollen lands on which part of the flower?

a. stigma

8. After double fertilization, a zygote and _____ form.

b. endosperm

9. The fertilized ovule gives rise to the _____.

b. seed

10. What is the term for a fruit that develops from tissues other than the ovary?

d. accessory fruit

11. The _____ is the outermost covering of a fruit.

c. exocarp

12. _____ is a useful method of asexual reproduction for propagating hard-to-root plants.

a. grafting

13. Which of the following is an advantage of asexual reproduction?

c. When cuttings or buds are taken from an adult plant or plant parts, the resulting plant will grow into an adult faster than a seedling.

14. Plants that flower once in their lifetime are known as _____.

d. monocarpic

15. Plant species that complete their lifecycle in one season are known as _____.

c. annuals

Critical Thinking Questions

16. Describe the reproductive organs inside a flower.

Inside the flower are the reproductive organs of the plant. The stamen is the male reproductive organ. Pollen is produced in the stamen. The carpel is the female reproductive organ. The ovary is the swollen base of the carpel where ovules are found. Not all flowers have every one of the four parts.

17. Describe the two-stage lifecycle of plants: the gametophyte stage and the sporophyte stage.

Plants have two distinct phases in their lifecycle: the gametophyte stage and the sporophyte stage. In the gametophyte stage, when reproductive cells undergo meiosis and produce haploid cells called spores, the gametophyte stage begins. Spores divide by cell division to form plant structures of an entirely new plant. The cells in these structures or plants are haploid. Some of these cells undergo cell division and form sex cells. Fertilization, the joining of haploid sex cells, begins the sporophyte stage. Cells formed in this stage have the diploid number of chromosomes. Meiosis in some of these cells forms spores, and the cycle begins again: a process known as alternation of generations.

18. Describe the four main parts, or whorls, of a flower.

A typical flower has four main parts, or whorls: the calyx, corolla, androecium, and gynoecium. The outermost whorl of the flower has green, leafy structures known as sepals, which are collectively called the calyx. It helps to protect the unopened bud. The second whorl is made up of brightly colored petals that are known collectively as the corolla. The third whorl is the male reproductive structure known as the androecium. The androecium has stamens, which have anthers on a stalk or filament. Pollen grains are borne on the anthers. The gynoecium is the female reproductive structure. The carpel is the individual structure of the gynoecium and has a stigma, the stalk or style, and the ovary.

19. Discuss the differences between a complete flower and an incomplete flower.

If all four whorls of a flower are present, it is a complete flower. If any of the four parts is missing, it is known as incomplete. Flowers that contain both an androecium and gynoecium are called androgynous or hermaphrodites. Those that contain only an androecium are known as staminate flowers, and those that have only carpels are known as carpellate. If both male

and female flowers are borne on the same plant, it is called monoecious, while plants with male and female flowers on separate plants are termed dioecious.

20. Why do some seeds undergo a period of dormancy, and how do they break dormancy?

Many seeds enter a period of inactivity or extremely low metabolic activity, a process known as dormancy. Dormancy allows seeds to tide over unfavorable conditions and germinate on return to favorable conditions. Favorable conditions could be as diverse as moisture, light, cold, fire, or chemical treatments. After heavy rains, many new seedlings emerge. Forest fires also lead to the emergence of new seedlings.

21. Discuss some ways in which fruit seeds are dispersed.

Some fruits have built-in mechanisms that allow them to disperse seeds by themselves, but others require the assistance of agents like wind, water, and animals. Fruit that are dispersed by the wind are light in weight and often have wing-like appendages that allow them to be carried by the wind; other have structures resembling a parachute that keep them afloat in the wind. Some fruits, such as those of dandelions, have hairy, weightless structures that allow them to float in the wind. Fruits dispersed by water are light and buoyant, giving them the ability to float; coconuts are one example. Animals and birds eat fruits and disperse their seeds by leaving droppings at distant locations. Other animals bury fruit that may later germinate. Some fruits stick to animals' bodies and are carried to new locations. People also contribute to seed dispersal when they carry fruits to new places.

22. What are some advantages of asexual reproduction in plants?

Asexual reproduction does not require the expenditure of the plant's resources and energy that would be involved in producing a flower, attracting pollinators, or dispersing seeds. Asexual reproduction results in plants that are genetically identical to the parent plant, since there is no mixing of male and female gametes, resulting in better survival. The cuttings or buds taken from an adult plant produce progeny that mature faster and are sturdier than a seedling grown from a seed.

23. Describe natural and artificial methods of asexual reproduction in plants.

Asexual reproduction in plants can take place by natural methods or artificial methods. Natural methods include strategies used by the plant to propagate itself. Artificial methods include grafting, cutting, layering, and micropropagation.

24. Discuss the life cycles of various plants.

Plant species that complete their life cycle in one season are known as annuals. Biennials complete their life cycle in two seasons. In the first season, the plant has a vegetative phase, whereas in the next season, it completes its reproductive phase. Perennials, such as the magnolia, complete their life cycle in two years or more.

25. How are plants classified on the basis of flowering frequency?

Monocarpic plants flower only once during their lifetime. During the vegetative period of their lifecycle, these plants accumulate a great deal of food material that will be required during their once-in-a-lifetime flowering and setting of seed after fertilization. Soon after flowering, these plants die. Polycarpic plants flower several times during their life span; therefore, not all nutrients are channeled towards flowering.