

The Secret Life of Flowering Plants

The stamen

1. Can you describe the number and arrangement of spore sacs (microsporangia) inside a typical anther?
2. The fertile tissue of the young anther contains two sets of chromosomes but produces spore cells with but one set of chromosomes. Can you explain this?
3. What changes take place as a spore (microspore) develops into a pollen grain?
4. Can you explain how an anther opens?

The ovary

5. What is a carpel? What are its parts?
6. What is an ovule? Where is it located and what is its structure in the young ovary ?
7. What do the spores (megaspores) within an ovule form? Do they all survive? Explain.
8. Explain how a spore (megaspore) inside the ovule gives rise to the female tissue (embryo sac).

Pollination and fertilisation

9. Can you explain what happens when a pollen grain lands on the stigma?
10. When the pollen tube emerges from the pollen grain, what cells are transported inside it? What path does it take to reach the ovules?
11. Can you describe the events that take place inside the pollen tube as it grows toward the ovules?
12. When the pollen tube reaches an ovule, can you describe the path it takes to reach the female tissue inside?
13. What is meant by double fertilisation? Do both fertilised cells contain the same number of chromosome pairs?

Embryo formation

14. What is the endosperm? What gives rise to it?
15. How does the young embryo become moved into the center of the endosperm tissue? What advantage does this have for its development?
16. What are the parts of the mature embryo in the seed?
17. Where are nutrients stored in the seeds of various types of flowering plants?
18. What changes take place in the jacket cells of the ovule as it becomes transformed into the seed?
19. What changes take place in the carpel as the ovule develops into the seed?