

Flower Dissection

LT: I can dissect a flower in order to identify and explain male and female sex organs in flowers. 4.4.1c

Introduction

In this lab, you will examine the intricate structures that compose a flower. Many angiosperms have, in a single flower, both the male and the female sex organs surrounded by petals. The egg (female haploid cell) and the pollen (containing one or more haploid sperm nuclei) are contained in the same flower.

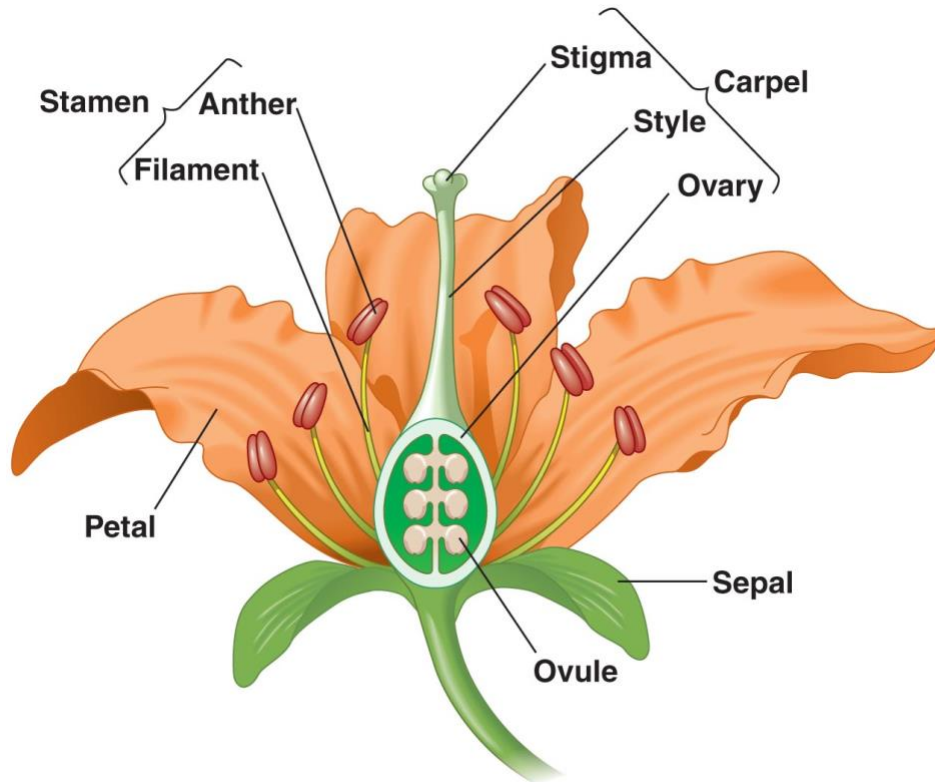


Figure 1: Cross-section of a flower.

The various parts of the flower help with the transfer of the pollen to the egg. There are typically four rings of structures in flowers, from outside to inside they are:

- sepals
- petals
- stamens
- carpels

Angiosperms may self-fertilize if pollen from a flower is transferred to egg cells in the same flower, or they may cross-fertilize. Carried on the wind or by other means, pollen grains from other flowers may land on the sexual organs of a flower and fertilize it.

a. Describe another way that cross-fertilization of flowers might happen (besides by the wind)? Would this be classified as internal or external fertilization?

Experimental Question

- How does pollen reach the female reproductive structures in the flower?

Procedure

*For each step, tape or glue the flower part to a piece of paper. Label the structure with the scientific name.

1. Obtain a large flower and examine it, using the diagram in Figure 1 as a reference. Look for the sepals of your flower. The sepals are typically on the outside of the flower, often green, sometimes small and withered, sometimes as large as the petals. The sepals protect the bud before it opens.

2. The petals compose the next "ring" of flower structures. You can think of petals as modified leaves. Examine the texture and color of the petals using a magnifying glass. If your flower is colored, pinch a small piece of a petal between your fingers and examine the colorful pigment released.

b: How does petal structure (color, fragrance, etc.,) relate to its function?

3. The male reproductive structures of the flower are called stamens. Pollen grains are released from the anther. Carefully pull back the petals of the flower to expose the stamens. Examine the anther using a magnifying glass and touch the tip of your finger to the anther.

c: Describe the structure and function of a stamen. In your description, be sure to describe the anther, filament and pollen.

4. Making up the innermost ring of structures is the carpel. A carpel is the part of the flower surrounding the egg. This structure is usually divided into three parts: the ovary, style, and stigma. To see the carpel clearly, gently separate the flower from the green sepals and base. Cut open the carpel to see the ovary. The ovary contains the haploid eggs.

d: Describe the structure and function of a carpel. In your description, be sure to describe the stigma, style and ovary.

Analysis:

e. How is the structure of the stigma adapted to help pollination occur?

f. How is the structure of the anther adapted to help pollination occur?

g. Describe one way that the reproductive structure of the plant is similar to the reproductive structure of humans.

h. Describe one way that the reproductive structure of the plant is different from the reproductive structure of humans.

i. How can we use evidence of common reproductive structures to inform decisions on the creation of cladograms?

	3	2	1
Dissection Presentation	The dissection presentation is clear and appears professional. There is a minimum of 4 labels.	The dissection presentation is clear. There is a minimum of 3 labels.	The dissection presentation is not clear. There are less than 3 labels.
Pre-Lab and Procedure	All lab prompts are thoroughly and correctly answered/described.	Most lab prompts are thoroughly and correctly answered/described.	Few lab prompts are thoroughly and correctly answered/described.
Analysis	All analysis prompts are thoroughly and correctly answered/described.	Most analysis prompts are thoroughly and correctly answered/described.	Few analysis prompts are thoroughly and correctly answered/described.

Participation					
I often contributed good ideas that were relevant to the topic and task. I came to meetings prepared. I did my share of the work.	4	3	2	1	I seldom contributed good ideas. Sometimes I was talking off-task. I did not come to meetings prepared. I did not do my share of the work.
Working with Others					
I often compromised and cooperated. I did take initiative when needed and/or listened and respected the ideas of others.	4	3	2	1	I seldom compromised and cooperated. I did not take initiative when needed and/or did not listen and respect the ideas of others.
Product					
My part of the task is complete and accurate. My work was submitted on time.	4	3	2	1	I did not complete my part of the task. The information I presented was inaccurate and/or not done correctly. It was not completed on time.
Understanding Content					
I can speak about the topic and group work knowledgeably. I can sum-up the lesson.	4	3	2	1	I do not understand what I did in my group. I did not ask or answer questions. I cannot sum-up the lesson.