Chapter 32 Project

Plant Reproduction Lab

Project Goal + Timeline

In this project, we will be reviewing your knowledge of plant reproduction by performing a flower dissection. This project should be completed within a group of two students in approximately two hours.

Directions

Part 1: Flower Dissection

Select a large flower, such as a lily, tulip, daffodil, or gladiolus, to dissect. Work through the following steps to dissect your flower. As you dissect, you can use your hands, scissors, or tweezers to carefully take apart your plant.

First, observe the sepals (the green, leaflike parts at the base of the flower) and the petals. Remove the sepals and petals by firmly holding the flower stem and gently pulling these structures away. Examine each, then set them to the side.

Observe the stamen. The stamen is made up of the filament (a stalklike structure) and anther (a cap-like structure that contains pollen grains). Carefully remove the stamen.

Observe the pistil. The pistil should appear as a slender, stalklike structure with a round base that is attached to the flower's stem. The rounded base is the ovary, which contains the ovules. The stalk is the style. The top is the stigma, which may be sticky. Carefully remove the entire pistil. Cut the pistil in half lengthwise with a razor blade.

Carefully scrape some pollen grains from the anther. Prepare a wet mount of the pollen grains by placing a small drop of water or glycerol on a glass microscope slide, place the pollen grains on the drop of water, and carefully lower a coverslip over the pollen grains. Observe the pollen grains using a light microscope. Focus the light microscope at the lowest power objective, and progress through the objectives until you've reached the highest power. Draw your observations in Table 1. Include the magnification under which you viewed the specimen.

Use a razor blade to carefully cut a thin section of the ovary from the pistil. Prepare a second wet mount of the ovary section using a microscope slide, coverslip, and drop of water. Observe the ovary under the lower objectives of the light microscope. Draw your observations in Table 1, including the magnification.

TABLE 1: Observations of Pollen Grains and Ovary

	Pollen Grains	Ovary
Drawing		
Magnification		

Tape one sepal, one petal, one stamen, and the pistil to Table 2. Label all parts of the structures, including the filament, anther, stigma, style, and ovary. Then, complete Table 3 by adding the description and function of each part.

TABLE 2: Flower Parts Collected during Dissection

Sepal	Petal
Stamen	**Pistil**

TABLE 3: Functions of Flower Parts

Structure	Description	Function
Sepals		
Petals		
Stamen		
Pistil		
Stigma		
Style		
Ovary		
Anther		
Filament		

Part 2: Post-Lab Questions

Complete the following questions about reproduction in plants.

1. Describe the structure of a pollen grain. How does a pollen grain change after it has encountered a pistil?
2. Angiosperms reproduce through a double fertilization event. Explain the events that occur in the pistil that result in double fertilization.
3. Identify one similarity and one difference between reproduction in gymnosperms and angiosperms.
4. Plant populations benefit from the increased genetic diversity that results from cross-pollination and the reduced competition facilitated by the dispersal of seeds away from a parent plant. Angiosperms have specialized adaptations to promote cross-pollination and seed dispersal. Provide at least two examples of such adaptations. Did the flower you dissected have any of these adaptations?

Project Materials

- Large flower, such as a lily, tulip, daffodil, or gladiolus
- Scissors
- Tweezers
- Microscope slides
- Coverslips
- Water
- Glycerol (optional)
- Razor blade
- Light microscope
- Project worksheet
- Tape
- Pen or pencil

Student Checklist

- ☐ Dissect the flower
- ☐ Observe pollen grains and ovary with a microscope
- ☐ Complete Table 1 with microscope observations
- ☐ Complete Table 2 with flower parts and include labels
- ☐ Complete Table 3 with descriptions and functions of flower parts
- ☐ Complete Post-Lab Questions