

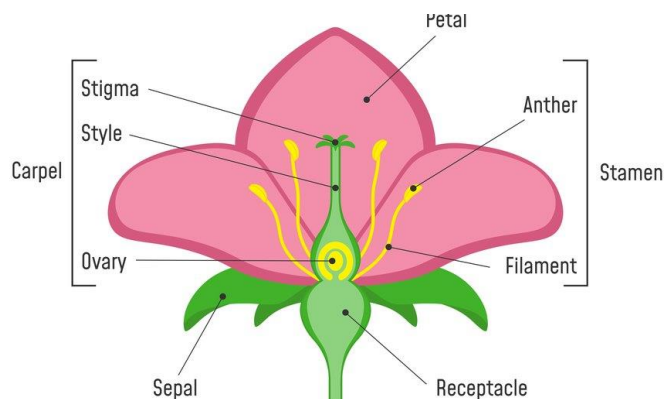
Mendel's Peas Animation Activity

Background Information

Sexually, pea flowers have both male parts (anthers, pollen) and female parts (stigma, ovary).

There are two ways pea plants can reproduce:

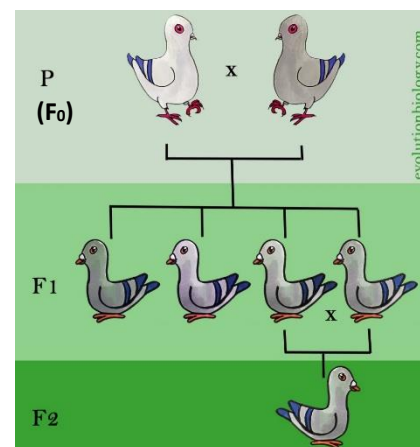
- **Self-fertilization:** The eggs are fertilized by its own pollen. (This is a form of sexual reproduction because it involves sperm and egg.)
- **Cross-fertilization:** The flower is fertilized by another plant's pollen.



F₀ (P) Generation: The parental generation. In Mendel's experiments, his F₀ were always pure-breeding.

F₁ Generation: The offspring produced by the F₀ generation.

F₂ Generation: The offspring produced by the F₁ generation.



Pre-Lab Questions

1. If you take a purple-flowered pea plant and cross it with a white-flowered pea plant, what do you predict the offspring will look like?

2. If you take two purple-flowered pea plants and cross them, what do you predict the offspring will look like?

Instructions

1. Go to the animation link below, which can also be found on Ms. Au's website.
https://www.newpathonline.com/api_player/enus_54_6208/2Lgdgi/index.html
2. Click the "Learn More" link and watch the video 1-2 times until you have a good grasp of the ideas within.
3. Run the simulation 5x for each of the choices of parental crosses. Record your findings in Table 1 on the following page.
4. Use your Table 1 data to complete Table 2.

Complete Table 1 using data collected from the simulation.

Table 1: Raw data collected from 100 crosses per generation for four different traits.

	Experiment 1		Experiment 2		Experiment 3		Experiment 4		Experiment 5	
	F ₁	F ₂	F ₁	F ₂	F ₁	F ₂	F ₁	F ₂	F ₁	F ₂
White flower	0	8	0	3						
Purple flower	20	12	20	17						
Green pod										
Yellow pod										
Wrinkled seed										
Round seed										
Tall plant (tip: has more flowers)										
Short plant (tip: has fewer flowers)										

Complete Table 2 using data from Table 1.

Table 2: Summary table

	Total F ₁ Plants	% of F ₁ Plants	Total F ₂ Plants	% of F ₂ Plants
White flower	How many F ₁ plants had white flowers?	Divide "Total F ₁ White-Flower Plants" by 100.	How many F ₂ plants had white flowers?	Divide "Total F ₂ White-Flower Plants" by 100.
Purple flower	How many F ₁ plants had purple flowers?	Divide "Total F ₁ Purple-Flower Plants" by 100.	How many F ₂ plants had purple flowers?	Divide "Total F ₂ Purple-Flower Plants" by 100.
Green pod				
Yellow pod				
Wrinkled seed				
Round seed				
Tall plant				
Short plant				

Questions

3.

- a) Describe the overall pattern you observe in the F_1 generation. What traits do the F_1 individuals have? In what proportions?

- b) Describe the overall pattern you observe in the F_2 generation. What traits do the F_2 individuals have? In what proportions?

4.

- a) For experiment A, compare your F_1 and F_2 percentages with your classmates. Are they the same? Different? Why do you think this is?

- b) Estimate the average F_1 and F_2 percentages for white and purple flower crosses.

F_1 : _____% white flower and _____% purple flower

F_2 : _____% white flower and _____% purple flower

5. Compare your findings in this simulation experiment to your predictions on the first page of this activity. What, if anything, surprised you about your results from this simulation experiment?
