



**Post-lab Questions**  
**Inheritance in Maize**

1. Can you infer from this data which trait is dominant and which is recessive? Explain why.

The purple corn color is dominant, and the yellow color is recessive, because there are more purple corn kernels present in this generation.

2. Compare the ratio of purple to yellow corn in the population. What were the class averages for yellow and purple corn kernels? To calculate the ratio, divide each number by the smaller of the two numbers.

For example: 76 Purple to 24 Yellow

$$76/24: 24/24 = 3.2 : 1 \text{ ratio}$$

3. With this information, how could this generation of corn have inherited pigmentation in this way? What do the genotypes of the parent generation have to be? Construct a Punnett square by using the following key:

P = the gene for purple

p = the gene for yellow

Parent genotypes: Pp x Pp

3 purple : 1 yellow

	P	p
P	PP Purple	Pp Purple
p	Pp Purple	pp Yellow

4. When Mendel studied his second generation of pea plants, he repeated the experiment thousands of times. What does this contribute to an experiment, and how would your results change if you counted kernels on thousands of ears of corn instead of just 100?

Sampling a large number will increase the occurrence, and the results will be closer to the expected value. If you were to count more kernels, your numbers might be closer to the expected 3:1 ratio seen in the offspring.



Post-lab Questions

Human Population Study

1. Compare the results of this study with what you expected to occur. Do you think that dominant traits are more common or stronger? Are recessive traits less common or weaker? What did the results of the experiment prove?

Answers will vary. Students might think that dominant traits are better and stronger than recessive traits. As you can see in this experiment, it does not determine the occurrence of particular traits.

2. For each of your traits, list your phenotype and the corresponding possible genotype(s) for each trait. Answers will vary.

	Phenotype	Genotype
Chin (C or c)	_____	_____
Hairline (W or w)	_____	_____
Earlobes (E or e)	_____	_____
PTC (T or t)	_____	_____
Thumb (B or b)	_____	_____
Little Finger (L or l)	_____	_____
Mid-Digit Hair (H or h)	_____	_____
Dimples (D or d)	_____	_____

3. Choose one of your traits, and use Punnett squares to predict the genotypes of your parents. What are possible combinations that could have given you that trait?

Answers will vary.

3. After using the Human Traits Wheel, do you expect any other class members to have the same number as you? Discuss these numbers with the entire class.

- a. If there are students that have the same number, what can you conclude about those people? Are they related just because they have the same number?

Those other students have the same combination of traits as you. They are not necessarily related to you.

- b. If there is great diversity within the class population, what does that tell you about your peers in the class?

They differ greatly.

4. How would the class data change as you increased the number of students that recorded their traits? Do you think that this would change the number of dominant or recessive traits in any significant way? How would it affect the outcome of the human traits wheel?

Answers will vary.

Because the human population is much more complex than the pea plants, we do not expect to see any of the expected ratios like Mendel did with his pea plants.