

CORN GENETICS LAB

Name: _____

Partner: _____

INTRODUCTION

In this lab the two genes to be observed will be seed colour and seed shape. The purple colour is dominant over the yellow colour and round seeds are dominant over wrinkled seeds. The ears of corn in this kit were grown under controlled conditions in which the pollen from a plant with a known genotype was used to fertilize the ovum with a known genotype. So each ear of corn you will analyze is from a known genotype mating.

First you will make predictions about the offspring of corn matings. Then you will observe the phenotypes and count the offspring on ears of corn to confirm Mendel's postulates. Finally you will compare your observed results with Mendel's predicted phenotype ratios. A **postulate** is an assertion of truth. Mendel's postulates were:

1. For each trait, organisms inherit two alleles, one from each parent.
2. If the 2 inherited alleles differ, then the dominant allele is expressed and the recessive allele is not.
3. The Law of Segregation states that the two alleles of a given gene segregate or separate from each other during meiosis and that each gamete randomly receives one allele of each gene.

COUNTING KERNELS

Note your partner and yourself will take turns counting the kernels. Each partner is responsible for counting half of a cob.

1. Place a rubber band around a specimen so that it bisects the ear lengthwise. See Figure 1. The rubber band divides the ear into sides and makes counting the kernels easier.
2. **Partner 1:** Count the number of kernels that have the same phenotype on one half of the ear of corn.
3. Record this count on side 1 of the appropriate data table.
4. **Partner 2:** Repeat step 2 for the other side of the corn.
5. Record this count on side 2 of the appropriate data table.
6. Using the same ear of corn, repeat this process for another phenotype.
7. Record your partner's data.
8. Count and record all the data before calculating averages.

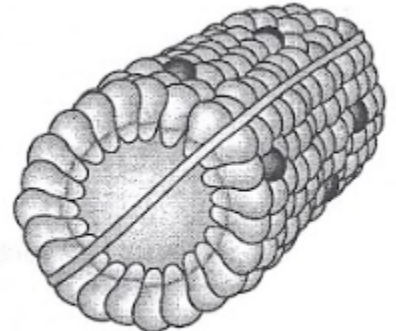


Figure 1

Use the following formula to calculate averages for each phenotype you studied.

- 1- Add up the 2 totals for a phenotype
- 2- Add the totals to get a grand total.
- 3- Calculate averages for each phenotype, using the following formula

$$\text{Phenotypes \%} = \frac{\text{total (of that particular phenotype)}}{\text{grand total}} \times 100$$

Pre-Lab: Complete the two pages of pre-lab prior to coming to the lab.

Lab set up notes

Station 1- Monohybrid cross

Station 2- Monohybrid test cross

Station 3- Dihybrid cross

Station 4- Dihybrid test cross

Each team will complete 2 of the 4 stations. Your teacher will assign you the stations on the day of the prelab. It is important you pay attention and complete the assigned work.

Teams A- will complete Stations 1 and 4, their pre lab are pages pS1(read), pS4(complete), pS5 (complete), pS6 (read) and pS14-15 (read)

Teams B- will complete Stations 2 and 3, their pre lab are pages pS1 (read), pS7(complete). pS8 (read) and pS12(complete) -pS13 (read)

The lab write up is due _____