



Name - _____

Partner - _____

Lab - Modelling Evolutionary Processes in Coloured candies

Purpose - to model the evolutionary mechanisms of genetic drift and gene flow.

Part 1

Materials - 1. Jelly beans in a jar 2. Paper towel

Procedure -

- 1.) Open the jar of jelly beans; this represents the original population of the *Coloured candies* organisms.
- 2.) With your eyes closed, pick out 10 jelly beans from your jar and place them on the paper towel; this represents the genetic drift population. Record all the necessary information for the genetic drift population.
- 3.) After you have recorded the information for the genetic drift population, empty the rest of the jar and record the necessary information for the original population. **Don't forget the 10 jelly beans you removed are part of the original population.**

Data and Observations -

Table 1 - Genetic drift of *Coloured candies*

<u>Colour of candy from genetic drift population</u>	<u>Number of each colour from genetic drift population</u>	<u>Percent of each colour from genetic drift population</u>	<u>Colour of candy from original population</u>	<u>Number of each colour from genetic drift population</u>	<u>Percent of each colour from genetic drift population</u>
Dark blue					
Light blue					
Red					
Pink					
Green					
Yellow					
White					
Orange					
Black					
White/red					
	Total number of candy in genetic drift population =			Total number of candy in genetic drift population =	

Part 2

Procedure -

- 1.) Now take your genetic drift population and compare it to a genetic drift population of another group.
Record the frequencies and percentages of each colour.
- 2.) The two populations have now formed a new population, called the gene flow population. Calculate the frequencies and percentages for the new population.

Data and Observation -

Table 2 -

<u>Allele (colour of candy)</u>	<u>Frequency in population #1</u>	<u>Percent population #1</u>	<u>Frequency in population #2</u>	<u>Percent population #2</u>	<u>Frequency in Gene flow population</u>	<u>Percent in Gene flow population</u>
Dark blue						
Light blue						
Red						
Pink						
Green						
Yellow						
White						
Orange						
Black						
White/red						

Analysis -

- 1.) Look at the colours in your genetic drift population and the corresponding percentages. Now, compare those to the same colours/percentages in the original population (for example, in the genetic drift population, red might have had percentage of 50% while in the original population red was only 16%). Write these comparisons down in a list format.
- 2.) Does the new genetic drift population accurately represent the original population? Explain by citing your data.
- 3.) What colours in the original population are NOT represented in the genetic drift population?

- 4.) When you compare the percentages of each colour, are they the same for the original population and the genetic drift population? Explain.
- 5.) Let's assume that the jelly beans are praying mantises and that the new environment consists of lots of greenery and many bright red flowers. Which colours in the genetic drift population would have better fitness in this new environment? Why/how? How might that affect the alleles for those individuals?
- 6.) Which ones would have less fitness? Why/how? What might happen to the alleles for those individuals that have less fitness?
- 7.) Describe (explaining how) a specific scenario in which the *Coloured candius* may have experienced genetic drift.

Conclusion -