Middle School Life Science Laboratory Practical: Version A

Name: _____

Student ID #: _____

Teacher: _____ Period: _____

Introduction. Individuals inherit their genes from their parents and those genes determine that individual's traits. Some traits are determined by one gene and some are the result of the interaction of many different genes. An example of a trait that is determined by a single gene is the color of kernels in corn. Kernel color in corn can be either red or yellow (see Figure 1). The gene that codes for kernel color comes in two versions – one codes for red color and the other codes for yellow. The red color allele is dominant (R) and the yellow color allele is recessive (r).

Figure 1. An ear of corn with red kernels and yellow kernels

In this investigation you will be given two ears of corn. Both ears of corn will have a mixture of red kernels and yellow kernels but the number of red and yellow kernels on each ear will be different because the two ears of corn had different parents. The parent plants could have either all red kernels or all yellow kernels. Your task will be to use what you know about how genes are inherited to determine the traits of the parent corn plants for two different ears of corn. You will have one class period (but no more than 60 minutes if your class is longer) to plan and conduct your investigation.

The guiding question of this investigation is: *Which ear of corn, A or B, had a parent with all red kernels and a parent with all yellow kernels?*

Materials. You can use any of the following materials:

Specimens

- Ear of Corn A
- Ear of Corn B

Equipment

- Colored Straight Pins
- Calculator

Part 1: Design your investigation.

1. How will you collect the data you need to answer the guiding question? Describe the procedure you will follow during your investigation with enough detail so someone else can replicate it.

2. What are some strengths of the investigation you designed? (What makes your investigation scientific?)

3. What are some weaknesses of the investigation you designed? (What makes your investigation less scientific?)

Part 2. Carry out your investigation and collect the data you need to answer the guiding question.

1. Record your data (observations and/or measurements) in the space below.

2. Why did you decide to make these observations and/or measurements? (Why were these the most appropriate data to collect?)

Part 3: Analyze your data and then answer the following questions.

1. What is your claim? (Your answer to the guiding question.)

2. What is your evidence to support your claim?

3. Why is your evidence important? (Defend or justify your choice of evidence to support your claim).

Middle School Life Science Laboratory Practical: Version B

Name: _____

Student ID #: _____

Teacher: _____ Period: _____

Introduction. Individuals inherit their genes from their parents and those genes determine that individual's traits. Some traits are determined by one gene and some are the result of the interaction of many different genes. An example of a trait that is determined by a single gene is the color of kernels in corn. Kernel color in corn can be either purple or yellow (see Figure 1). The gene that codes for kernel color comes in two versions – one codes for purple color and the other codes for yellow. The purple color allele is dominant (P) and the yellow color allele is recessive (p).

Figure 1. An ear of corn with purple kernels and yellow kernels

In this investigation you will be given two ears of corn. Both ears of corn will have a mixture of purple kernels and yellow kernels but the number of purple and yellow kernels on each ear will be different because the two ears of corn had different parents. The parent plants could have either all purple kernels or all yellow kernels. Your task will be to use what you know about how genes are inherited to determine the traits of the parent corn plants for two different ears of corn. You will have one class period (but no more than 60 minutes if your class is longer) to plan and conduct your investigation.

The guiding question of this investigation is: *Which ear of corn, A or B, had two parents with all purple kernels?*

Materials. You can use any of the following materials:

Specimens
- Ear of Corn A
- Ear of Corn B

Equipment
- Colored Straight Pins
- Calculator

Part 1: Design your investigation.

1. How will you collect the data you need to answer the guiding question? Describe the procedure you will follow during your investigation with enough detail so someone else can replicate it.

2. What are some strengths of the investigation you designed? (What makes your investigation scientific?)

3. What are some weaknesses of the investigation you designed? (What makes your investigation less scientific?)

Part 2. Carry out your investigation and collect the data you need to answer the guiding question.

1. Record your data (observations and/or measurements) in the space below.

2. Why did you decide to make these observations and/or measurements? (Why were these the most appropriate data to collect?)

Part 3: Analyze your data and then answer the following questions.

1. What is your claim? (Your answer to the guiding question.)

2. What is your evidence to support your claim?

3. Why is your evidence important? (Defend or justify your choice of evidence to support your claim).