

Plastic Egg Genetics



Traits, also called **phenotypes**, are the **physical characteristics** influenced by your genes, which you inherit from your parents.

For each gene, you get at least one allele from your mother and one allele from your father. The alleles you end up with are determined by two factors:

- (1) the **genotypes**, the genetic makeup of your parents; and
- (2) the **allele** from each parent you inherit.

A **dominant allele** is one whose trait always shows up, even when only one of the two alleles is in the dominant form. A dominant allele is shown by a capital letter. A **recessive allele** is one that is hidden when the other copy of the gene contains the dominant allele. A recessive allele shows up only when there is no dominant allele present. The alleles you inherit from each parent are determined by chance.

The probability of certain traits being shown can be worked out by using **Punnett Squares**. A Punnett Square is a chart that shows all the possible combinations of alleles from parents that can result when genes are crossed.

In this activity you will examine plastic eggs, figure out the genotypes of the "parent" eggs, and complete a Punnett Square to determine what offspring would be possible from such a cross.

Procedure

On your lab table, there are a variety of plastic eggs.

- a. Choose one egg, but do not open it yet. Record the phenotypes (the visible characteristics of an organism) and genotypes of your egg (the genetic makeup).
- b. Place the genotypes of your egg into the Punnett Square.
- c. Determine the genotypes and phenotypes of the offspring.
- d. Open your egg – do your results match the results inside the egg?
- e. If yes, then place the egg back together and pick another egg! If no, check your work and make corrections.
- f. Complete 5 eggs and Punnett Squares. You may do 3 eggs with a partner; however, do at least 2 eggs on your own.

Phenotype and Genotype Chart

½ Egg Phenotype	½ Egg Genotype	½ Egg Phenotype	½ Egg Genotype
Purple	PP	Blue	BB
Orange	Pp	Green	Bb
Pink	pp	Yellow	bb

½ egg + ½ egg = 1 whole plastic egg

Example of how to fill in data

Phenotype

My egg is ½ Blue
and ½ Green

Genotype

(B B) x (B b)

	B	B
B	BB	BB
b	Bb	Bb

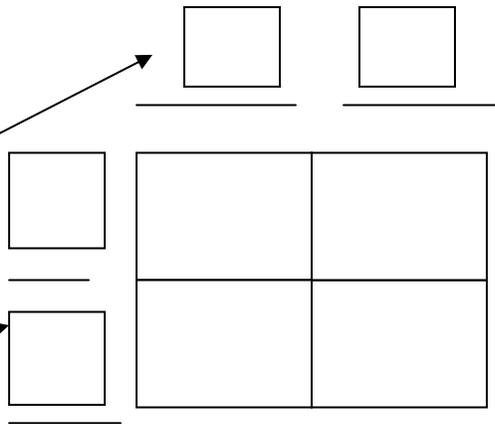
My Results: 2 (BB) Blue & 2 (Bb) Green

Inside the Egg: 2 Blue Pieces & 2 Green Pieces

Egg 1

Phenotype
My egg is ½ _____
and ½ _____
Genotype
(_ _) x (_ _)

Punnett Squares



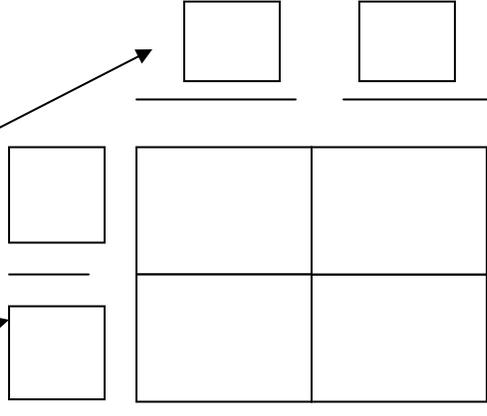
My Results: _____

Inside the Egg: _____

Egg 2

Phenotype
My egg is ½ _____
and ½ _____
Genotype
(_ _) x (_ _)

Punnett Squares



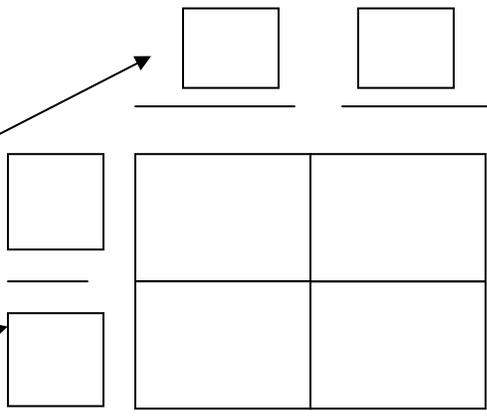
My Results: _____

Inside the Egg: _____

Egg 3

Phenotype
My egg is ½ _____
and ½ _____
Genotype
(_ _) x (_ _)

Punnett Squares



My Results: _____

Inside the Egg: _____

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Egg 4

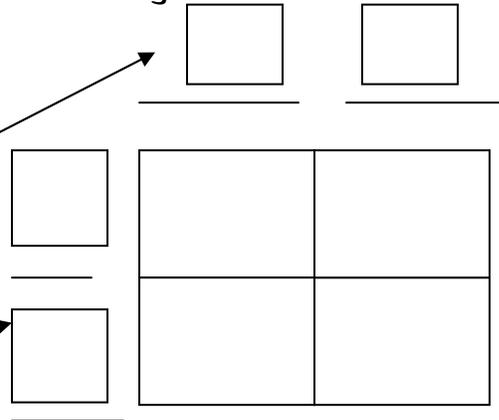
Phenotype

My egg is ½ _____

and ½ _____

Genotype

(_ _) x (_ _)



My Results: _____

Inside the Egg: _____

Egg 5

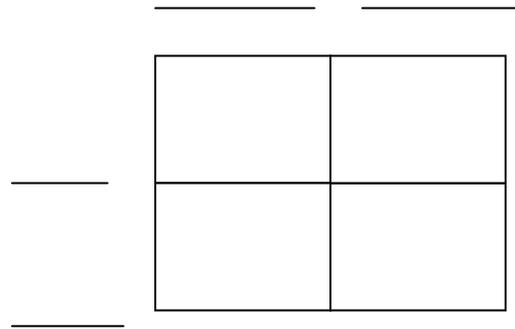
Phenotype

My egg is ½ _____

and ½ _____

Genotype

(_ _) x (_ _)



My Results: _____

Inside the Egg: _____

Results

Egg	½ Color	Genotype	½ Color	Genotype	#XX	Results #Xx	#xx
Example	Blue	BB	Green	Bb	2 BB Blue	2Bb Green	-----
1							
2							
3							
4							
5							