

* CLASS SET *

PROBABILITY

Background: Each of your parents have 2 genes for every trait they have. You randomly receive one gene per trait from each parent. This gives you your total of 2 genes per trait-- one gene comes from each of your parents.

Genes are found in pairs on chromosomes, which are located in the nucleus of cells. Each gene pair represents a trait. We use letters to represent genes when studying genetics. If a capital letter is used (ex: D) then the trait is **dominant**. If a lower case letter is used (ex: d) then the trait is **recessive**. Because genes are in pairs, you can have 2 dominant genes, 2 recessive genes, or one of each gene, in the pair.

Pre-Lab Questions:

1. What is the (%) chance of receiving a recessive allele from 1 parent? _____
2. What is the (%) chance of receiving a dominant allele from 1 parent? _____
3. Based on the info in Procedure step 1, what color hair do your parents have? _____
Explain how you know... _____
4. Set up a Punnett Square here to show the predicted outcomes of their offspring:

| | |
|--|--|
| | |
| | |

PROCEDURE:

HEADS = D = DARK HAIR (dominant)
TAILS = d = LIGHT HAIR (recessive)

___ 1. Let's say dark hair is dominant (we'll use the letter D; heads on the coin), and light hair is recessive (we'll use the letter d; tails on the coin). Assume both of your parents are heterozygous for their hair color. (Each parent is Dd).

___ 2. One coin will represent the mother, and the second coin represents the father. Flip each coin 50 times and record the outcomes in the Trait Tallies data table on the back:



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TRAIT TALLIES

| | DD (heads + heads) | Dd (heads + tails) | dd (tails + tails) |
|-----------------|-----------------------|-----------------------|-----------------------|
| | | | |
| TOTALS | | | |
| PERCENTS | % | % | % |

3.)

Questions:

1. Explain why flipping coins is a good representation of fertilization...

2. What evidence from this labtivity suggests that exactly 50% of our genetic info comes from each of our parents? _____
3. CONSIDERING WHAT YOU DISCOVERED FROM FLIPPING COINS (hint: look at your data table percentages!), WHAT IS THE CHANCE (%) OF YOU:
 - A. being "heterozygous" from both parents? _____%
 - B. being "homozygous recessive" from both parents? _____%
 - C. being "homozygous dominant" from both parents? _____%
4. THE ONLY TIME A RECESSIVE PHENOTYPE WILL SHOW UP IS IF THE GENE PAIR IS HOMOZYGOUS RECESSIVE. WHAT IS THE CHANCE OF YOU:
 - A. having light hair? _____%
 - B. having dark hair? _____%
5. Are traits in offspring somewhat predictable? Explain why or why not.

