

Name: _____

Period: ____ Date: _____

Lab Activity: Create a Baby

Purpose: To demonstrate the principles of Mendelian genetics and sex determination, including the concepts of allele, phenotype, genotype, dominant, recessive, co-dominant, homozygous and heterozygous by creating a simulated baby.

Materials: Two pennies, art supplies, paper.

Pre-lab Questions:

1. Define the following terms (10 points):

Allele -

Phenotype -

Genotype -

Dominant -

Recessive -

Co-dominant -

Homozygous -

Heterozygous -

Chromosome -

Gene -

Procedure:

1) With your partner, you will flip coins to determine the genotype of your baby. “Dad” flips a coin to choose an allele for his sperm. (*Note: the sex of the baby is determined by dad alone. Boys are XY and girls are XX. Mom can give only an X but dad can give an X or a Y chromosome.*) – **Heads = X, Tails = Y**

2) Flip coins to determine the alleles for each trait listed in Table 1. Write down baby’s genotype for each trait (use the **Reference Sheet**). Heads represents allele #1 and tails represents allele #2.

3) Record the resulting phenotypes in Table 1. Note: *Dominant alleles are written with an uppercase letter and recessive alleles are written as lowercase letters.* Dominant alleles cover the appearance of recessive ones. Co-dominant alleles are as uppercase letters, with a subscript. Co-dominant alleles result in a phenotype that is blended (a mix).

4) Once you have completed Table 1, you must draw, color, and name your creation. *Remember that you are drawing a baby’s face—not a child’s or an adult’s (no tattoos, pierced ears, mustaches, etc.)*

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Results:

Table 1: Circle here whether you are the **mom** or **dad** and fill in the data below (15 points).

Mom's Name: _____ Dad's Name _____ Per. ____

Baby's Name: _____

TRAIT	ALLELE FROM <u>MOM</u>	ALLELE FROM <u>DAD</u>	GENOTYPE	PHENOTYPE
Sex	X			
Face Shape				
Chin Shape				
Chin Dimple				
Freckles				
Cheek Dimples				
Lip Thickness				
Eyebrows				
Eye Shape				
Eyelashes				
Ear Shape				
Ear Lobes				
Widow's Peak				
Hair Curliness				
Eyebrow Color				
Eye Width				
Eye Size				
Mouth Size				
Nose Size				
Birth Mark				
Skin Tone				

POLYGENIC TRAIT	ALLELES FROM <u>MOM</u>		ALLELES FROM <u>DAD</u>		GENOTYPE		PHENOTYPE
Hair Color							
Eye Color							

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DRAW YOUR BABY HERE: (15 points)



Post-Lab Questions: (10 points)

1. Why is the coin flip used to represent the selection of alleles?
2. What is co-dominance?
3. Which traits in this activity were co-dominant? How do you know?
4. What is a polygenic trait?
5. Which traits in this activity were polygenic? How do you know?