

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Genetics Practice 7: Patterns of Inheritance

In human hair, texture is an example of incomplete dominance.

HH= Curly Hair

Hh= Wavy hair

hh= straight hair

1. A curly haired father and wavy haired mother have offspring. What are the offspring's genotypes and phenotypes?
2. If a mother has straight hair and the father has wavy hair, is it possible for their son to have curly hair? Use a Punnett square to as proof of your answer.

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	Eye Color	Hair Type	Blood Type
<b>Mom</b>	Brown (heterozygous)	Wavy	O
<b>Dad</b>	Blue	Straight	B (homozygous)
<b>Ray</b>	Brown (heterozygous)	Straight	AB
<b>Steve</b>	Blue	Curly	B (heterozygous)
<b>Mike</b>	Brown (heterozygous)	Wavy	B

Use the above table to complete the Punnett squares below.

3. Cross Mom and Dad for all 3 traits. Assume that eye color follows simple inheritance with only two alleles.


Eye Color


Blood Type


Hair Type

4. Identify which male is the son of Mom and Dad. Explain your choice.

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5. Mrs. Savant is blood type A and Mr. Savant is blood type O. They have three children named Anthony, Walter, and Patrice. Anthony is type O, Walter is type A, and Patrice is type AB.

- a. Mr. Savant must have the genotype \_\_\_\_.
- b. Mrs. Savant must have the genotype \_\_\_\_ because \_\_\_\_\_ has blood type \_\_\_\_.
- c. Which child can't be related to Mr. and Mrs. Savant?

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6. The year is 1968. DNA fingerprinting technology does not yet exist. Two parents think their baby was switched at the hospital. The mother has blood type O, the father has blood type AB, and the baby has blood type B.
- Mother's genotype: \_\_\_\_\_
  - Father's genotype: \_\_\_\_\_
  - Baby's genotype: \_\_\_\_\_ or \_\_\_\_\_
  - In the space above, create a Punnett square showing all possible genotypes for children produced by this couple. Was the baby switched?
7. Imagine a paternity suit (lawsuit regarding the father of a baby). Based on the information in the table below, which men **could not** be the father of the baby? Justify your answer with a Punnett square.

Name	Blood Type
Mother	Type A
Baby	Type B
François the Egomaniac	Type O
George the Sleazebag	Type AB
Wanda the Poorly-Named	Type A
Dr. Perfect	Type B

8. Imagine a similar situation. Based on the information in this table, which men **could not** be the father of the baby? Justify your answer with a Punnett square.

Name	Blood Type
Mother	Type O
Baby	Type A
Julio the Sheep-Shearer	Type O
Wallace the Unemployed	Type AB
Sylvester the Chair	Type A
Gaëtan the Flight Attendant	Type B

9. Explain why blood type data cannot prove who the father of a baby is, and can only prove who the father is not.