**Monohybrid Crosses Practice**

Is Bb a genotype or phenotype? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Is hair color a genotype or phenotype \_\_\_\_\_\_\_\_\_\_\_\_

Is hair color a genotype or phenotype? \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Is BB homozygous or heterozygous? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is bb homozygous or heterozygous? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Is Bb homozygous or heterozygous? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Match the following terms:

\_\_\_\_\_ Heterozygous A. Dominant allele

\_\_\_\_\_ Homozygous B. Recessive allele

\_\_\_\_\_ B C. Heterozygous genotype

\_\_\_\_\_ b D. Homozygous dominant genotype

\_\_\_\_\_ BB E. Homozygous recessive genotype

\_\_\_\_\_ Bb F. The two alleles are the **same**

\_\_\_\_\_ bb G. The two alleles are **different**

1. A widow’s peak (B) is dominant to not having a widow’s peak (b). A homozygous male with a widow’s peak marries a homozygous recessive female with no widow’s peak. Determine the possible offspring from this cross.

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Probability widow’s peak \_\_\_\_\_\_\_\_ Probability no widow’s peak \_\_\_\_\_

Probability homozygous dominant \_\_\_\_\_\_\_

Probability homozygous recessive \_\_\_\_\_\_\_

Probability heterozygous \_\_\_\_\_\_\_\_

2. In purple people eater, having one-horn is dominant (B) and having no-horns is recessive (b). Cross a heterozygous one-horned male purple eater with a female purple people eater that has no horns to determine the possible offspring.

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Probability one horn \_\_\_\_\_ Probability no horns \_\_\_\_\_\_

Probability homozygous dominant \_\_\_\_\_\_\_

Probability homozygous recessive \_\_\_\_\_\_\_

Probability heterozygous \_\_\_\_\_\_\_\_

3. The gene that results in a person being albino is a recessive trait (aa). Normal pigmented skin (A) is dominant to albino skin (a). **Two heterozygous normally pigmented parents** (Aa) have an albino baby. They plan to have more children and want to know the chances of having albino and normally pigmented children.

 Male genotype: Aa Female genotype: Aa

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Probability normal pigment \_\_\_\_\_\_\_ Probability albino \_\_\_\_\_\_

Probability homozygous dominant \_\_\_\_\_\_

Probability homozygous recessive \_\_\_\_\_\_

Probability heterozygous \_\_\_\_\_\_\_

These parents were have normal pigmented skin. How is it possible for them to have a recessive albino child? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. The couple’s original albino child grows up and marries a **heterozygous** normally pigmented person, who has an albino sibling. Determine the possible offspring from this cross.

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Probability normal pigment \_\_\_\_\_\_\_ Probability albino \_\_\_\_\_\_\_

Probability homozygous dominant \_\_\_\_\_\_\_

Probability homozygous recessive \_\_\_\_\_\_\_

Probability heterozygous \_\_\_\_\_\_\_\_

5. In chimpanzees, straight fingers are dominant (B) to bent fingers (b). Determine the offspring from a cross between a heterozygous straight fingered chimpanzee and a homozygous bent chimpanzee.

Probability straight fingers \_\_\_\_\_\_\_\_\_\_\_ Probability bent fingers \_\_\_\_\_\_\_

Probability homozygous dominant \_\_\_\_\_\_\_\_

Probability homozygous recessive \_\_\_\_\_\_\_\_

Probability heterozygous \_\_\_\_\_\_\_\_

6. The ability to taste a certain chemical, PTC, is an inherited human characteristic. The allele for taster is dominant (D) to that for non-taster (d). Determine the possible offspring from a cross between a heterozygous taster male and a heterozygous taster female.

Probability taster \_\_\_\_\_\_\_\_\_\_\_\_ Probability non-taster \_\_\_\_\_\_\_\_\_

Probability homozygous dominant \_\_\_\_\_\_\_\_\_

Probability homozygous recessive \_\_\_\_\_\_\_\_\_

Probability heterozygous \_\_\_\_\_\_\_\_\_

7. In fruit flies, red eye (R) is dominant to pink eye (r). Determine the possible offspring in a cross between a pink eyed male and a heterozygous red eyed female.

Probability red eye \_\_\_\_\_\_\_\_\_\_\_\_ Probability pink eye \_\_\_\_\_\_\_\_

Probability homozygous dominant \_\_\_\_\_\_\_\_

Probability homozygous recessive \_\_\_\_\_\_\_\_

Probability heterozygous \_\_\_\_\_\_\_\_

8. In humans having freckles (A) is dominant to not having freckles (a). Using the Punnett square below, explain what the **genotypes** and **phenotypes** of the parents of this cross would be.

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|  | ? | ? ? |
| ? | **BB** | **Bb** |
| ? ? | **Bb** | **bb** |

9. The pedigree below shows the pedigree of a family with freckles. Based on the genotypes of the parents above what would be the genotypes of the grandparents? Create Punnett Squares to support your answer.

Grandparent a:

Grandparent b:

Grandparent c:

Grandparent d:

10. Think about to Maria and Lucy Aylmer. Now that you know how to use a Punnett Square to conduct a monohybrid cross, create a Punnett Square to show how Maria and Lucy inherited alleles from their parents. While eye color is not a simple Mendelian trait, assume it is for this problem. Blue eyes are recessive to brown eyes. Explain your Punnett square and how the twins inherited the colors they did.

Dad’s phenotype: blue Maria: brown eyes

Mom’s phenotype: brown Lucy: blue eyes