

Name: _____

Genetics Project: Design a Species

Directions:

You will be creating an imaginary Creature. Your creature should be simple in design and **MUST** have at 5 genetic traits from the following list:

- 2 Single Allele Traits
- 1 Co-Dominant Trait
- 1 Incomplete Dominance Trait
- 1 Multiple Allele Trait
- 1 Sex-Linked Trait

Steps:

1. Describe and sketch each of the traits on the list, showing genotypes and phenotypes for each (see sample on back page).
2. Sketch two examples of your creature using the list that you created in Step 1. The two examples **MUST** have different genotypes and phenotypes.
3. Using both of your single allele traits, create a dihybrid cross between your two creatures.
4. Show a cross using your multiple allele trait.
5. Create a pedigree tracing one of your traits through three generations of your creatures. There should be at **LEAST FOUR OFFSPRING per generation (this does not include spouses)**. Provide genotypes for each creature. Be sure to indicate if the trait you are tracing is autosomal dominant, autosomal recessive, sex-linked dominant, or sex-linked recessive
6. Create a worksheet of 5 practice problems that you could give to a classmate using any of your traits. You do not have to actually solve these problems, but they should be solvable.

Name: _____

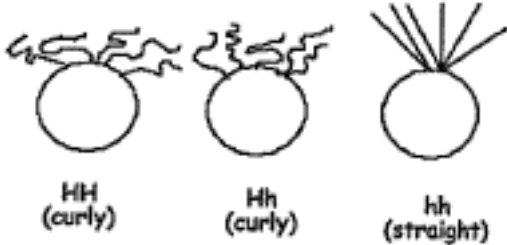
Step 1: Creature List Sample

DO NOT USE TRAITS FROM THIS LIST FOR YOUR CREATURE - THIS IS A SAMPLE

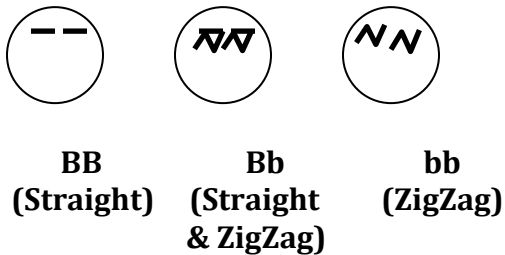
1. Single Allele Trait #1: Shape of Head



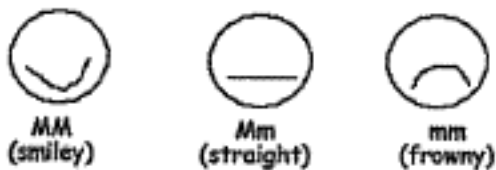
Single Allele Trait #2: Hair



2. Co-Dominant Trait: Eyebrows



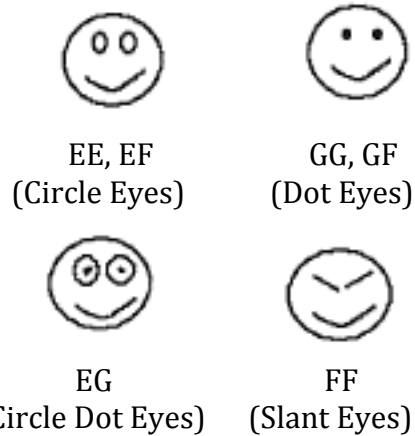
3. Incomplete Dominance Trait: Mouth Shape



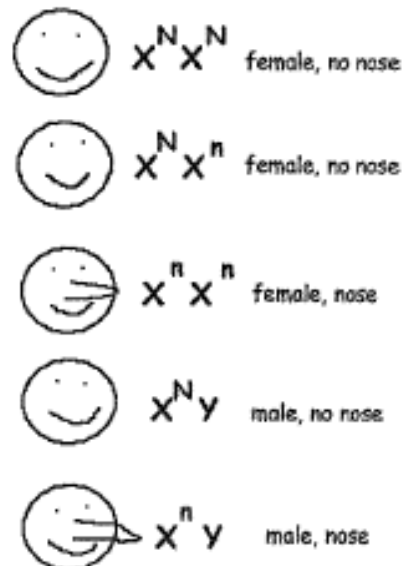
4. Multiple Allele Trait: Eye Shape

- a. E= Circle Eyes
- b. G = Dot Eyes
- c. F= Slant Eyes
- d. EG = Circle Dot

(Circle and Dots are codominant, slant eyes are recessive)



5. Sex - Linked Trait: Noses



Name: _____

Step 1: Description and Sketch of Traits

Name: _____

Step Two: Creature Sketches

Creature #1 Drawing:

Creature #1 Genotype:

Creature #1 Phenotype:

Creature # 2 Drawing:

Creature #2 Genotype:

Creature #2 Phenotype

Name: _____

Step Three: Dihybrid Cross Using Single Alleles

Creature #1: F= O= I= L=
Creature #2: F= O= I= L=

Creature # 1

Creature #2

Genotypic Ratio:

Phenotypic Ratio:

Name: _____

Step Four: Multiple Allele Cross

Creature #1 Multiple Allele Genotype:

Creature #2 Multiple Allele Genotype:

Creature # 1

Creature #2

Genotypic Ratio:

Phenotypic Ratio:

Name: _____

Step Five: Create a Pedigree

Name: _____

Step Six: Questions

Name: _____

Step Six: Questions Answer Key