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Name:_____ Due Date_____ 0

Genetics Project - Design a Species

Objective: Genetics follows certain rules, as illustrated by punnet squares, principles of dominance and recessiveness, and rules related to the location of alleles on the chromosomes. In animals, such as mouse, certain traits are expressed in predictable ways. In this project, you are going to design your own imaginary species, and create traits for the species that follow genetic rules that you have already studied.

The creature should have at least 5 genetic traits from the following list. You are free to create whatever traits you like (such as hair color, size, shape, or other features)

- 2 Single-allele traits
- 1 Codominant trait (or incomplete dominance) - specify which
- 1 Multiple allele trait
- 1 Sex linked trait

Your final project should have the following elements:

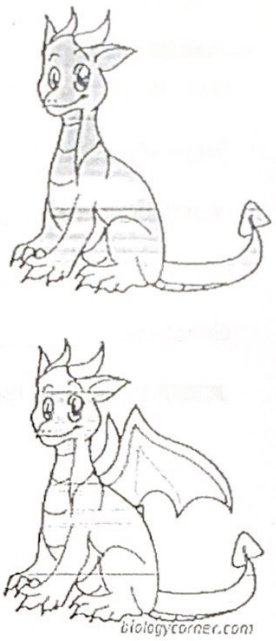
1. ~~Describe or~~ sketch each of the traits from the list, listing genotypes and phenotypes for each. Partial sketches are fine in this case.

2. Sketch two examples of your creature – one male and one female. The two examples must have different genotypes. Each sketch should have the genotype listed for all traits.

3. Pick one of your single allele traits and create a sample pedigree for your creature. The pedigree should include at least 4 generations.

4. Show a dihybrid cross (using your 2 single allele traits—ex: AaBb x AaBb) List the phenotypic ratios.

5. Create 5 practice problems, using ~~any~~ one of each of the traits. These should be word problems. Do not just write Aa x Aa.



This student used dragons for her creatures, but you don't need to make yours this fancy.

In this example, wings are a dominant trait, the top dragon has the genotype ww, and the bottom dragon has the genotype WW

Genetics Project Grading Rubric			
	Unsatisfactory (3 pts)	Satisfactory (4pts)	Excellent (5 pts)
Traits and pictures	Some do not follow genetics "rules", pictures not clear	Follows genetics rules, pictures are small or lacking in creativity or effort	Follows genetics rules, pictures are drawn large and clearly. Colored. Creative.
Creature examples	Genotype doesn't follow phenotype, pictures not included or unclear	Genotype follows phenotype, all traits included, pictures somewhat unclear or not neat	Genotype follows phenotype, pictures drawn clearly, neatly and creatively, and colored
Pedigree	Less than 4 generations are shown, significant mistakes in genotypes	4 generations shown, minor mistakes in genotypes	4 generations shown, no mistakes
Dihybrid Cross	Punnett square not set up correctly, phenotypic ratios not given or incorrect	Punnett square set up correctly, minor errors in counting and ratios	Square set up correctly, phenotypic ratios given correctly
Practice problems	Less than 5 problems given, more than 1 is impossible to solve	5 problems given, somewhat unclear or unsolvable	All 5 problems are written well and can be solved
TOTAL			

GENETICS PROJECT ELEMENTS:

1, ~~Describe or~~ sketch each of the traits from the list, listing genotypes and phenotypes for each. Partial sketches are fine in this case.

Single-allele trait #1

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

~~Describe or~~ sketch here:

Single-allele trait #2

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

~~Describe or~~ sketch here:

2. Sketch two examples for your creature-one male and one female. The two examples must have different genotypes. Each sketch should have the genotype listed for all traits.

Male sketch:

Female sketch:

3. Pick one of your single allele traits and create a sample pedigree for your creature. The pedigree should include at least 4 generations.

Pedigree:

4. Show a dihybrid cross (using your 2 single allele traits—ex: AaBb x AaBb). List the phenotypic ratios.

(specify which)

Codominant (or incomplete dominant trait)

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

~~Describe~~ or sketch here:

Multiple allele trait

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

~~Describe~~ or sketch here:

Sex linked trait

Male:

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

~~Describe or~~ sketch here:

Female:

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

Genotype: _____ Phenotype: _____

~~Describe or~~ sketch here:

5. Create 5 practice problems, using one for each type of trait. These should be word problems. Do not just write Aa x Aa.

--Single-allele trait #1

--Single allele trait #2

--Codominant (or incomplete dominance)

--Multiple allele trait

--Sex linked trait