



pets in the
classroom

Decoding the Guinea Pig Blueprint:

Genes and Heredity

Student Worksheet

Reminders:

- The dominant B allele is responsible for black fur, while the recessive b allele is responsible for brown fur.
- The dominant H allele is responsible for a guinea pig with hair while the recessive h allele is responsible for no hair (Skinny pigs)
- The dominant R allele is responsible for Black eyes, while the recessive r allele is responsible for red eyes
- The dominant G allele is responsible for banded colored fur while the recessive g allele is responsible for a solid coat

Important Vocabulary:

- **Allele:** Variations of a gene
- **Gene:** sections of DNA
- **Heterozygous:** one of each of the alleles
- **Homozygous:** two of the same alleles
- **Phenotype:** the trait that we see
- **Genotype:** the arrangement of the alleles

Complete the Punnett squares for each of the crosses.

1. Guinea Pig A : heterozygous for black fur

Guinea Pig B: homozygous for brown fur

How many guinea pigs will have black fur? _____

How many guinea pigs will have brown fur?_____

2. Guinea Pig A : homozygous for hair

Guinea Pig B: homozygous for no hair

How many guinea pigs will have hair? _____

How many guinea pigs will have no hair?_____

3. Guinea Pig A : heterozygous for black eyes

Guinea Pig B: heterozygous for black eyes

How many guinea pigs will have black eyes? _____

How many guinea pigs will have red eyes?_____

4. Guinea Pig A : heterozygous for banded fur

Guinea Pig B: homozygous for solid colored fur

How many guinea pigs will have banded fur?_____

How many guinea pigs will have solid colored fur?_____

5. Guinea Pig A : homozygous for black fur

Guinea Pig B: homozygous for brown fur

How many guinea pigs will have black fur?_____

How many guinea pigs will have brown fur?_____

6. Guinea Pig A : homozygous for no hair

Guinea Pig B: heterozygous for hair

How many guinea pigs will have hair?_____

How many guinea pigs will have no hair?_____

Given what you know about guinea pig characteristics, hypothesize about the genetics of YOUR classroom pet:
 HWat alleles do you think he/she has?

Hair/ NO hair:_____

Banded or solid:_____

Eye color_____

Hair color _____

Now, imagine a different guinea pig and create a fictional cross between the imagined animal and the actual animal:

Imagined Pig Alleles

Hair/no hair: _____

Banded or Solid: _____

Eye Color: _____

Hair color: _____

Hair/No hair	Banded or Solid	Eye color	Hair color																
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Support or refute the following claim with Evidence and Reasoning:

Claim: Fur color, hair length, and eye color in guinea pigs are determined by the inheritance of specific genes.

Evidence:

Reasoning: