



# Dihybrid Cross Worksheet 5: Epistasis

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## Comprehension problems

1. Define epistasis: \_\_\_\_\_  
\_\_\_\_\_
2. Compare and contrast epistasis and complete dominance. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Define recessive epistasis. \_\_\_\_\_  
\_\_\_\_\_
4. Define dominant epistasis. \_\_\_\_\_  
\_\_\_\_\_

## Dihybrid cross problems

3. A species of mice has a gene encoding fur pigmentation (P, pigmentation; p, no pigmentation) and another encoding fur color (B, brown, b, gray). Assume complete dominance. If a mouse that is homozygous recessive for fur pigmentation and heterozygous for fur color is mated with a mouse that is heterozygous and homozygous dominant for fur pigmentation and fur color, respectively, fill out the dihybrid cross and determine the following:

- a. P1 genotypes: \_\_\_\_\_
- b. P1 gamete combinations:  
Parent 1: \_\_\_\_\_  
Parent 2: \_\_\_\_\_
- c. Possible F1 genotypes: \_\_\_\_\_
- d. Determine what proportion of the F1 are expected to have:
  - i. Brown fur: \_\_\_\_\_
  - ii. Gray fur: \_\_\_\_\_
  - iii. Pigmentation: \_\_\_\_\_
  - iv. No pigmentation: \_\_\_\_\_


## Analytical problem

4. Is fur pigmentation in Question 3 an example of dominant epistasis, recessive epistasis, or both?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

