

Fruit flies and genetic traits

[Science](#), [Anthropology](#)



Fruit Flies and Genetic Traits Experiment Ebony x Wildtype The organism chosen for this particular experiment is the Ebony x Wildtype. Below is the Punnett square that shows this cross. The "+" represents the wildtype (normal) gene and "e" represents the ebony (mutant) gene.

1. Given that ebony is a recessive trait, what percentage of these offspring should express the mutation (have ebony colored bodies)?

Top of Form

- A. 100%
- B. 0%
- C. 50%

Bottom of Form

2. What percentage will have normal colored (wildtype) bodies?

Top of Form

- A. 0%
- B. 25%
- C. 100%

Bottom of Form

3. Organisms are called carriers of a gene if they do not express it themselves but they can pass it on to their offspring. If the progeny of this original cross were to mate, what percentage of their offspring would have ebony bodies? (HINT: Draw out a $e/+ \times e/+$ punnett square)

Top of Form

- A. 100%
- B. 50%
- C. 75%

D. 25%

Explain how this assignment relates to Mendelian genetics.

This assignment relates to Mendelian genetics because it has applied the three laws by Mendel. The first law is the law of segregation. This law holds that a pair of alleles separate from the other to form gametes. One half of the gametes are carried by one allele while the other half is carried by the second allele (Service 1). This is the reason why in the above experiment, none of the offspring's expressed mutation because ebony was a recessive trait. On the other hand, all the offspring had normal colored bodies (wildtyped) because each parent had a recessive gene.

The second law is the principle of independent assortment which advocates that different gene traits from different organisms assort independently to form gametes. This is the reason why in the above experiment, the carrier organism does not express the gene but it ends up passing the gene to some of its offspring (Service 1). For instance, if mating took place between the original cross, then 25% of the offspring are likely to have ebony bodies. This is in the ration of 3: 1.

The third law is the law of dominance. The law advocates that dominant alleles tend to mask recessive alleles. Hence, for a genotype to display recessive phenotype it must be homozygous recessive. Dominant phenotype on the other hand can only be displayed by heterozygous genotypes (Service 1). The reason why none of the offspring in the experiment above express mutation is because ebony is a recessive trait.

Works Cited

Service Elizabeth. A Day in the Life of a Fruit Fly Scientist. 12 Feb. 2014.

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