

# Fruit fly lab essay



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## Fruit Fly Lab

### Introduction

The major topic of this experiment was to examine two different crosses between *Drosophila* fruit flies and to determine how many flies of each phenotype were produced. Phenotype refers to an individual's appearance, whereas genotype refers to an individual's genes. The basic law of genetics that was examined in this lab was formulated by a man often times called the "father of genetics," Gregor Mendel. He determined that individuals have two alternate forms of a gene, referred to as two alleles. An individual can be homozygous dominant (two dominant alleles, AA), homozygous recessive, (two recessive alleles, aa), or heterozygous (one dominant and one recessive allele, Aa). There were two particular crosses that took place in this experiment. The first cross-performed was Ebony Bodies versus Vestigle Wings, where Long wings are dominant over short wings and normal bodies are dominant over black bodies. The other cross that was performed was White versus Wild where red eyes in fruit flies are dominant over white eyes.

The purpose of the first experiment, Ebony vs. Vestigle was to see how many of the offspring had normal bodies and normal wings, normal bodies and vestigle wings, ebony bodies and normal wings, and ebony body and vestigle wings. The purpose of the second experiment White vs. Wild was to see how many of the offspring were red eyed male, white eyed male, red eyed female, and white eyed female.

### Methods and Materials

In the first week of this particular experiment two vials were prepared both containing instant medium and dry yeast. One was labeled ebony vs. vestigle and the other labeled white vs. wild. Heterozygous flies were placed in the ebony vs. vestigle vial, and flies with a genotype of  $XwXw$  (x)  $XwY$  were crossed in the white vs. wild. The second week of the experiment the heterozygous flies were removed from the vial before their offspring pupate. The same was done with the ebony vs. vestigle the parental flies were removed. Using flynap, which anesthetized the flies for up to 50 minutes without killing them, allowed for the flies to be removed. Two absorbent swabs were dipped in the flynap and then placed in the vials with the plugs still on the vials. The swabs were left in the vial for 2 to 4 minutes, and then the parental flies were removed. The offspring's were left in the vials to pupate. During the third week the same procedure was performed on the offspring. In the ebony vs. vestigle vial the offspring were separated into normal bodies and normal wings, normal bodies and vestigle wings, ebony bodies and normal wings, and ebony body and vestigle wings. In the white vs. wild the offspring were separated into red eyed male, white eyed male, red eyed female, and white eyed female. The phenotype of the parental cross in the white vs. wild was white eyed females (x) red eyed males. The phenotype of the parental cross in the ebony vs. vestigle was ebony body color (x) normal body vestigle wings. The phenotype of the flies put in the F1 vial for white vs. wild was white eyed males (x) red eyed females. The F1 cross for ebony vs. vestigle was normal body (x) normal winged.

The phenotypic ratio that I expected for the white vs. wild was a 3: 1 ratio where of the offspring would have the red eyed dominant allele and would

have the white eyed recessive allele. The phenotypic ratio that I expected for the ebony vs. wild was that all the offspring would have ebony body color and 50% would have normal wings and 50% would have vestigle wings.

## Results