CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)

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Project Number

22278

Project Title

Will the Recessive Allele of a Fruit Fly's Eye Color Be Exhibited in the Presence of a Dominant Allele?

Abstract

Objectives/Goals

The objective is to deteremine if a recessive allele will show in the phenotype of a Drosophila melanogaster eye color.

Methods/Materials

Sepia flies, which has recessive brown eyes, was crossbred with Wild flies, which had dominant red eyes. Their offspring#s eyes, looking exactly like the Wild, were compared to the parents by the process of paper chromatography. The chromatograms were only visible under a fluorescent black light.

Results

There was slightly less drosopterin (orange) pigment in the Heterozygous compared to the Wild. The xanthopterin (green-blue) pigment is very dark in the Sepia whereas very light in the Wild. The data was quantified by measuring the Rf value, pigment length, and using a spectrophotometer, which all measured the amount of pigment. There was a noticable difference between the Homozygous and Heterozygous eye pigment in the spectrophotometer at 4000 angstrom units, right at the lower edge of ultraviolet radiation. Sepia had the lowest Rf value, followed by the Heterozygous and Wild. The Heterozgyous almost had the exact same Rf value as Wild, but the Wild was slightly higher.

Conclusions/Discussion

The Wild#s eye color isn#t exactly the same as the Heterozygous#s, as shown in the Rf values, pigment lenghts, and spectrophotometer readings. This experiments proves that the dominant trait doesn#t override recessive trait completely, as stated in many textbooks.

Summary Statement

In a Drosophila melanogaster (fruit fly's) eye color, the Heterozgyous condition does NOT have the exact same phenotype as the Homozygous condition.

Help Received

Used lab equipment at school; Did all experiements under Mr. Dowling supervision