



CALIFORNIA STATE SCIENCE FAIR 2004 PROJECT SUMMARY

Name(s) Sara M. Carman	Project Number S1403
Project Title Magnetized Melanogaster	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to determine if magnetic fields cause mutagenic effects in <i>Drosophila melanogaster</i>. I believe that magnetic fields will not cause a mutagenic effect in <i>Drosophila melanogaster</i>.</p> <p>Methods/Materials A culture of 200+ wild-type <i>Drosophila</i> flies are placed in an enclosure wrapped with electric wiring (a solenoid) that produces a magnetic field stronger than that of Earth. Magnetized wild type males will be crossed with non-magnetized virgin Muller-5 females producing the F1 generation. A control group using only non-magnetized flies will be crossed in the same manner, male wild type with female Muller-5 fruit flies. The F1 generation will be back-crossed to produce the F2 generation. The F2 generation will be studied for phenotype results of 1:1:1:1.</p> <p>Results The experimental cultures produced 877 F2 flies. The phenotypic results are 246 Red/Bar-eye females; 236 White/Bar-eye females; 193 White/Bar-eye males; 202 Wild-type males. The control cultures produced 1020 flies. The phenotypic results are 273 Red/Bar-eye females; 251 White/Bar-eye females; 227 White/Bar-eye males; 269 Wild-type males. A phenotypic ratio of 1.2 : 1.1 : 1 : 1.2 resulted. A total population of 1897 flies represents a valid number of individuals in a population for genetic study.</p> <p>Conclusions/Discussion Experimental phenotypic results show 246 Red/Bar-eye females; 236 White/Bar-eye females; 193 White/Bar-eye males; 202 Red/Normal eye males. The experimental group produced a phenotypic ratio of 1.3 : 1.2 : 1 : 1. This ratio is very close to the 1:1:1:1 that was predicted by the Punnett Square was fulfilled. The presence of the male wild type fruit flies in the experimental group, expressing the normal eye shape and typical bright red color of the eye, refutes the possibility that a mutation exists. Placing a culture of fruit flies in an induced magnetic field and manipulating specific backcrossing in an F1 generation did not produce any mutagenic effects in the F2 progeny. The data supports my hypothesis that magnetic fields will not cause a mutagenic effect in <i>Drosophila melanogaster</i>.</p>	
Summary Statement To provide evidence that magnetic fields will not cause a mutagenic effect in <i>Drosophila melanogaster</i> .	
Help Received Mr. Skaggs provided me with more information to understand fruit fly genetics; Mr. Lum provided me with information to build and calculate the strength of my solenoid; my mom helped me culture the fruit flies and took pictures for my display board.	