Drosophila melanogaster’s Mutant Reaction to UV Radiation with a Link to the p53 Gene

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Using ultraviolet radiation (UV), this project demonstrates genetic mutations in the DNA of the Drosophila Melanogaster. According to my hypothesis, if Drosophila Melanogaster are exposed to UV radiation, then they will have a shorter life expectancy due to widespread mutations in their p53 gene and other genes. In my experiment, I demonstrated an effective method for mutating genes without using expensive technology such as CRISPR. While the control group was unexposed, the experimental group was exposed to a dose of 302 nanometer UV radiation. Although it was not feasible to sequence the fly’s DNA in time for this project, I proved my hypothesis by observing a distinctive increase in the leg length of the offspring (F1 generation) of Drosophila Melanogaster. Leg lengths for the control group did not show mutation. Furthermore, the lifespan of F1 generation Drosophila Melanogaster whose parents were exposed to UV radiation was significantly shorter than the control group. At twenty days, only 36 percent of the F1 generation with both parents exposed survived compared to 76 percent for the control group. Without the appropriate buffer for PCR analysis, I could not identify the specific gene or exact type of mutation that occurred. However, this project demonstrated that UV radiation has distinct mutagenic properties for the Drosophila Melanogaster. A gene on chromosome II controls leg-length, which showed a mutation during this experiment.

Awards Won: