Observing Effects of Nicotine on Drosophila melanogaster Possessing the Mutated RAS-Gene as Model for Cancer Progression in Humans Using GAL4-UAS System

Nanduru, Sanjana (School: Dr. Ronald E. McNair Academic High School)

As Nicotine products are considered less risky than tobacco products, many disregard the negative effects of Nicotine and satisfy themselves with the thought that it won't harm them. However, various studies have proven to show that Nicotine has damaging effects on your body if used excessively, and while it is difficult to prove that Nicotine can cause cancer, it is possible to research and conduct a scientific procedure to find if Nicotine can progress cancer as an alternative to its negative health effects. By using the RAS Cancer gene which is present in 30% of human cancer, it will provide useful information to see if Nicotine progresses cancer. By breeding two genetically engineered Drosophila Melanogaster- UAS-RAS & Eyeless-Gal4 (crossed in a previous study), you can expose their offspring which possess the mutated RAS Gene with Nicotine and observe their behavior, reproduction rate, life-span, and make an educated guess on whether the cancer progressed or not. From the data collected, the conclusion can be surely made that Nicotine definitely does have a negative impact on your body. The Drosophila Melanogaster exposed showed minimal reproduction along with an interesting difference in their behavior where they showed to be more relaxed and less jittery and jumpy. As opposed to those who weren't exposed to Nicotine, their reproduction status showed to be normal with the Drosophila reproducing within each other, and their behavior was mostly normal. Overall, their behavioral changes in terms of their movement, that significantly decreased suggests a cognitive decline ultimately leading to a decrease in your life span.

Awards Won: