Investigating the Role of Intracellular pH in Aging Drosophila melanogaster Behavior

Khang, Lily (School: Sentinel High School)

Research showed significant changes in the brain of Drosophila melanogaster such as fewer stem cells and smaller brains after knocking out nhes in the brain. Nhes also affect a decline in age and affect the lifespan of Drosophila. Sodium (Na+) proton (H+) exchangers (nhes) are pH regulators in the body. A negative geotaxis assay was conducted to test for differences in motor function. Two groups of flies were used, control (wildtype) and experimental (nhe1 knockout). To conduct the climbing assay, the flies were placed in a vial that was tapped three times. The flies were recorded climbing to the top of the vial in 30 seconds. The hypothesis: If knocking down nhe causes a decrease in lifespan, then it is expected the nhe1 null flies to be mostly at the bottom of the vial as they age compared to controls. Results displayed a trend that supports the hypothesis, although some of the results are non-significant. The averages varied due to the lifespan of the experimental groups which caused discrepancies in the data. To improve this experiment, a larger quantity of flies should be used to reduce the outliers.

Awards Won: