WDS and its Affects in Drosophila Cells

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**Background:**

WDS is a lethal gene more commonly known as “will die slowly” (Vatolina). It is a protein coding gene that contributes to histone acetyltransferase activity and protein binding. WDS is involved in biological processes with histone H3-K4 methylation, chromatin remodeling, eye development, etc. (Flybase). WDS is lethal in all developmental stages including nurse cells, spermatogonia, and spermatocytes (European). WDS is mainly mentioned in experiments with drosophila, but one book mentions that WDS associates with histone acetyltransferase MOF in both mammals and drosophila (Acton). Any translation product of WDS contains seven repeats of WD. Which shows that there are many forms of WDS (Hollmann).

**Hypothesis:**

If we modify the gene WDS using CRISPR Cas9, then the effects that go along with the modified gene (new mutation) will be present. We expect the effects to be clear, resulting in directly killing the Drosophila, and never making it past the pupal stage.

**Significance:**

Deleting the gene can show the direct effects that the gene has on the larvae and pupal drosophila. It can also show how the adaptations of the drosophila can change the mortality rates and times. Adaptations and evolution can show us potentially how quickly it can affect genes such as WDS. This experiment compared to others could show us how much the drosophila has changed over time. Lastly, it could possibly show us how to eliminate potential diseases or organisms that cause harm. If we could do that, then we can kill them before they mature and become a hazard.

**Experimental design:**

Insert the WDS gene into the larvae of drosophila along with the CRISPR Cas9 gene. Let the larvae grow with the gene mutation, and chart and observe the changes in the larvae and pupal stages. Compare the results to a control group and previous experiments with WDS.

**Sources:**

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