

Title: The Behavioral Effects of Omitting the  $\alpha 1T$  gene in *Drosophila*  
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Voltage-gated calcium channels regulate calcium influx and vesicular release of neurotransmitters at chemical synapses. In *Drosophila*, there are three genes, *Dmca1D*, *1A*, and  $\alpha 1T$  encoding Cav1, Cav2 and Cav3-type channels respectively. Studies have shown that the  $\alpha 1T$  channels are important in the regulation of action potential firing in *Drosophila* at the neuromuscular junction and the central nervous system. The  $\alpha 1T$  has been shown to be expressed across the adult fly brain. These include sensory neuropils, motor-associated neuropils, and neuropils associated with learning and memory. We explored the role of the  $\alpha 1T$  gene in adult *Drosophila* and how it plays in motor-associated activity using a locomotor assay. Our data suggests that the  $\alpha 1T$  gene knockout results in a defect in regulating excitability in adult *Drosophila* that manifests in altered motor activity. Using a T-maze assay, the *Drosophila* are exposed to two different odors separately: 3-Octanol with no electric current and 4-Methylcyclohexanol (MCH) administered with electric currents. Exposure to MCH with electric currents will create a negative association towards MCH and condition the flies to favor 3-Octanol. The flies without the  $\alpha 1T$  gene are expected to be greatly impacted in their capability to build a negative connotation towards 4-Methylcyclohexanol, when compared to flies with the  $\alpha 1T$  gene.

## Works Cited

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