

## **Quantitative measurements of olfactory perceptual thresholds in *Drosophila***

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Previous work has identified the molecular, genetic, and circuit substrates for odor-driven behaviors in *Drosophila melanogaster*, but has yet to quantify the performance limits of such odor-driven behaviors. The goal of this project was to make quantitative measurements of the threshold for odor detections and discrimination in *Drosophila* to help better the understanding of the neural codes underlying behavior. In order to make these measurements a purpose built behavioral chamber was built where the *Drosophila* were trained via classical conditioning (via electric shock) against particular odors at varying concentrations. The *Drosophila* were then presented with the aversive odor and a neutral odor, again at varying concentrations, and the movements of the *Drosophila* out of the 'choice zone' into either the side of the chamber with the aversive odor or the side of the chamber with the neutral odor were recorded. By analyzing this data one would be able to identify what concentration of the aversive odor was required during both training and testing to cause the fly to form this association and see how the odor-driven behavior of the fly varies along the concentration curve and identify how far along the concentration curve one is able to maintain learned aversion.