

# Investigating Nicotine's Effect on *D. Melanogaster* Motor Function and Aggression

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# Introduction

The guiding interests behind our  
experimental design

# Introduction

- ◆ *Drosophila melanogaster* (*D. melanogaster*) is a popular model organism in neurobiology.
- ◆ Nicotine in e-cigarettes can cause adverse health effects.
- ◆ Acetylcholine impacts the regulation of motor movement.
- ◆ Dopamine and serotonin are tied to aggressive behavior.



# Hypothesis

Nicotine from e-cigarette vapor will reduce *D. melanogaster* motor function and increase aggression.




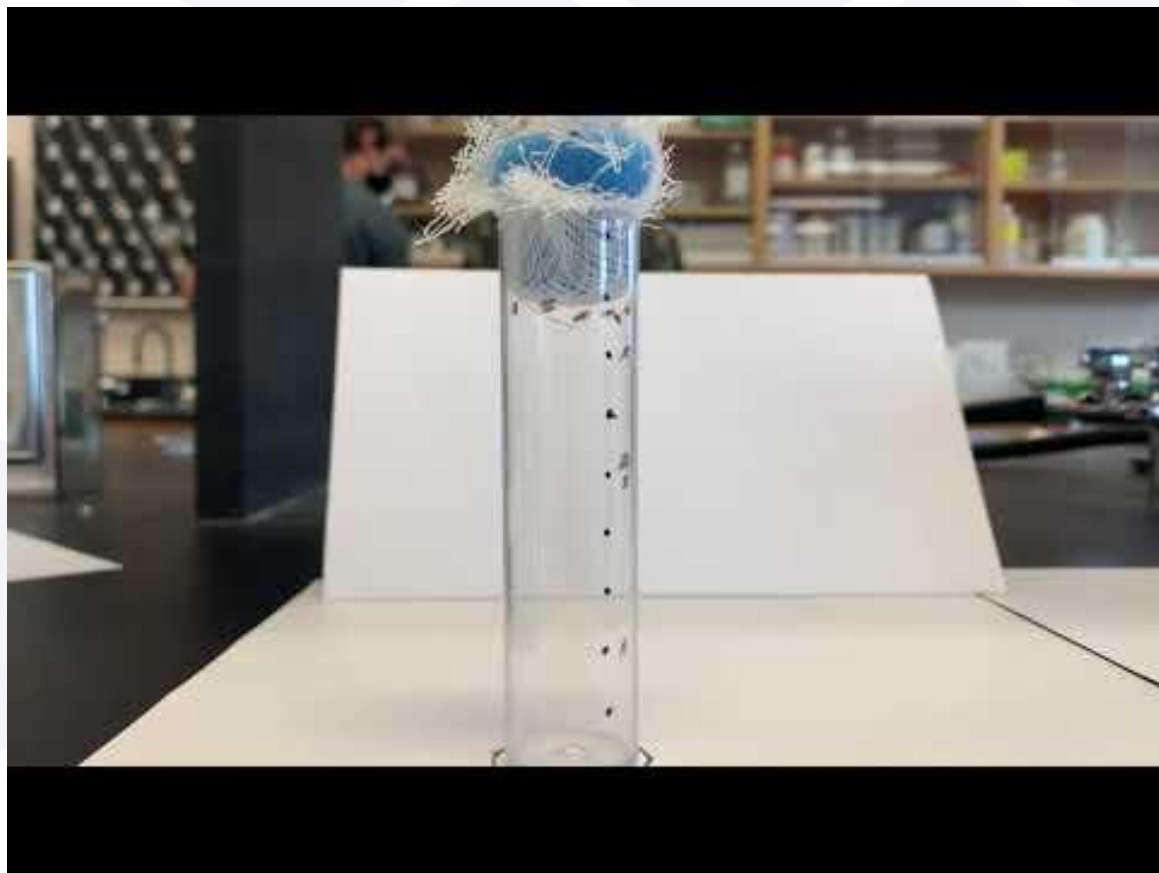
# Materials and Methods

Designing our experiment



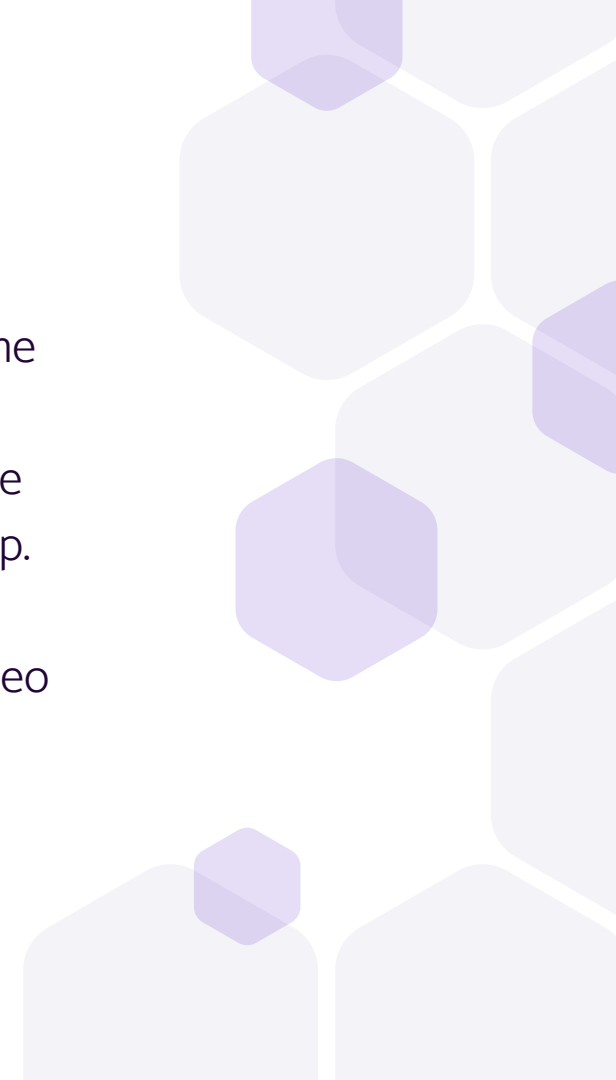
## RING Assay

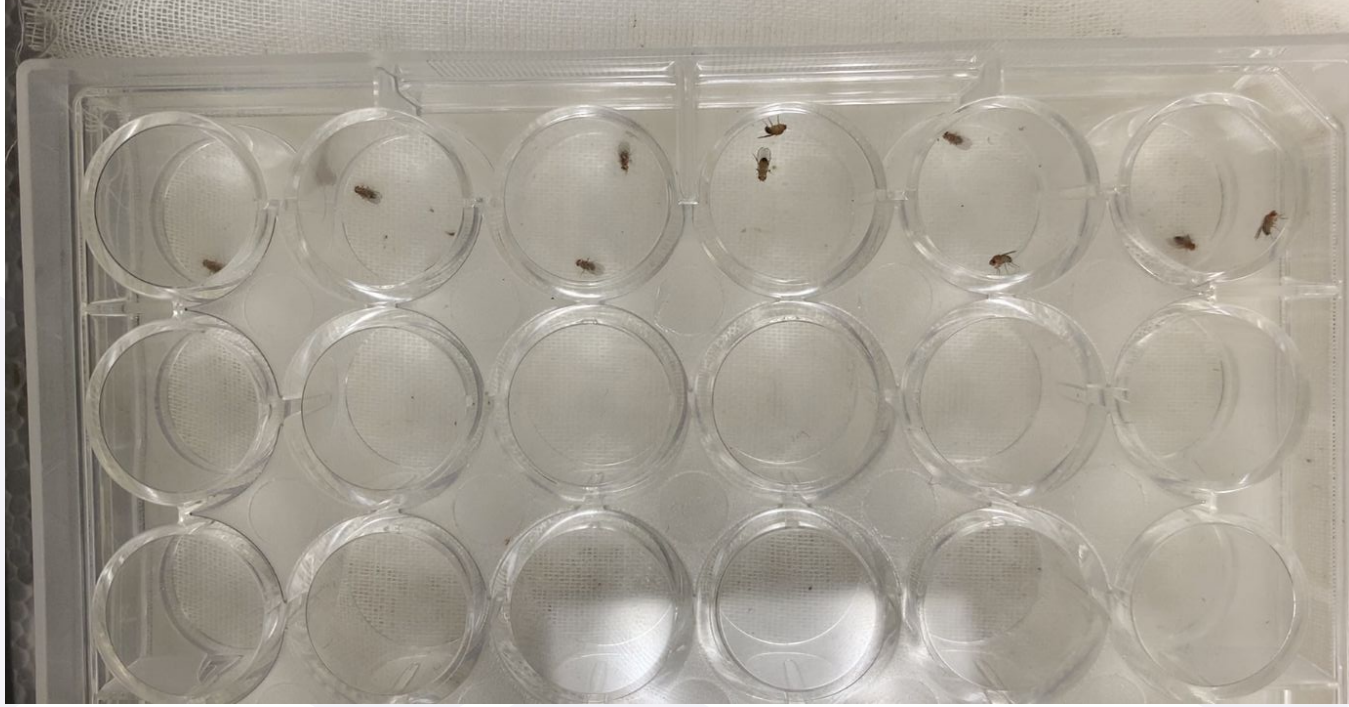
- ◆ *D. Melanogaster* were treated with the assigned nicotine treatment with 30 in each treatment group.
  - ◆ The treatment groups included a control, a 0% nicotine group, a 0.3% nicotine group, and a 1.2% nicotine group.
  - ◆ Each treatment group was vaped three times at 30 second intervals.
  - ◆ Two minutes after the vaping treatment, the RING assay was performed. Results were recorded six seconds after the last impact.
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# Aggression Assay

- ◆ D. Melanogaster were treated with the assigned nicotine treatment with 12 in each treatment group.
  - ◆ The treatment groups included a control, a 0% nicotine group, a 0.3% nicotine group, and a 1.2% nicotine group.
  - ◆ Each treatment group was vaped only once.
  - ◆ Afterwards, latent aggression was recorded using a video camera.
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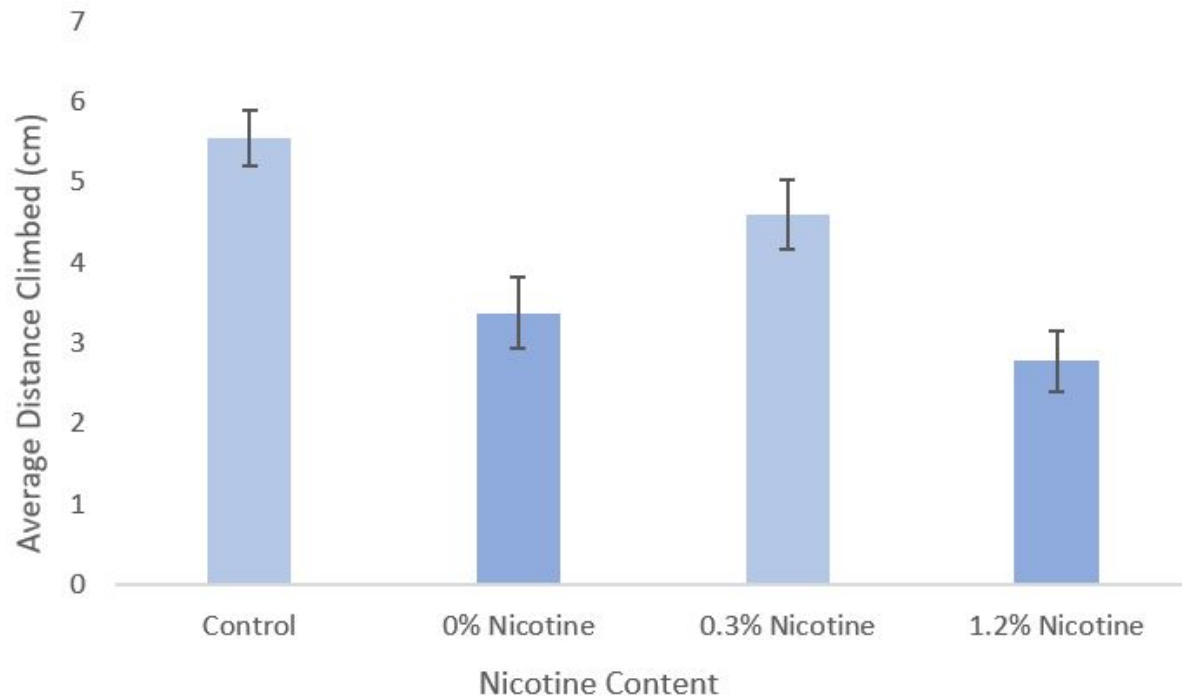




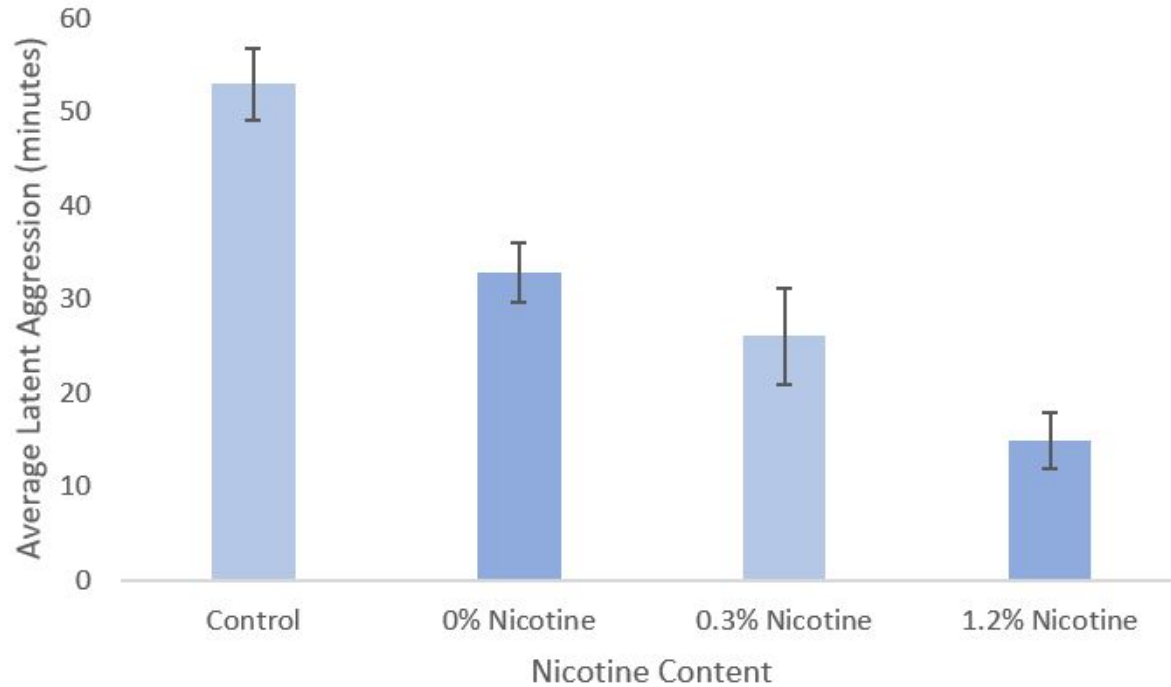
# Results

What did we find?

# RING Assay Results




# Aggression Assay Results





# Conclusions and Limitations

- ◆ We found a statistical difference in the latent aggression assay between control group and all three treatment groups.
  - ◆ While our results cannot definitively say that nicotine concentration is the sole factor in affecting *D. melanogaster* behavior, we do have strong evidence that vaping does.
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# Acknowledgements

- ◆ Dr. Stefanie Otto-Hitt





# References

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