

Drosophila Model for Potential Plasticizer Induced Hyperactivity

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Introduction

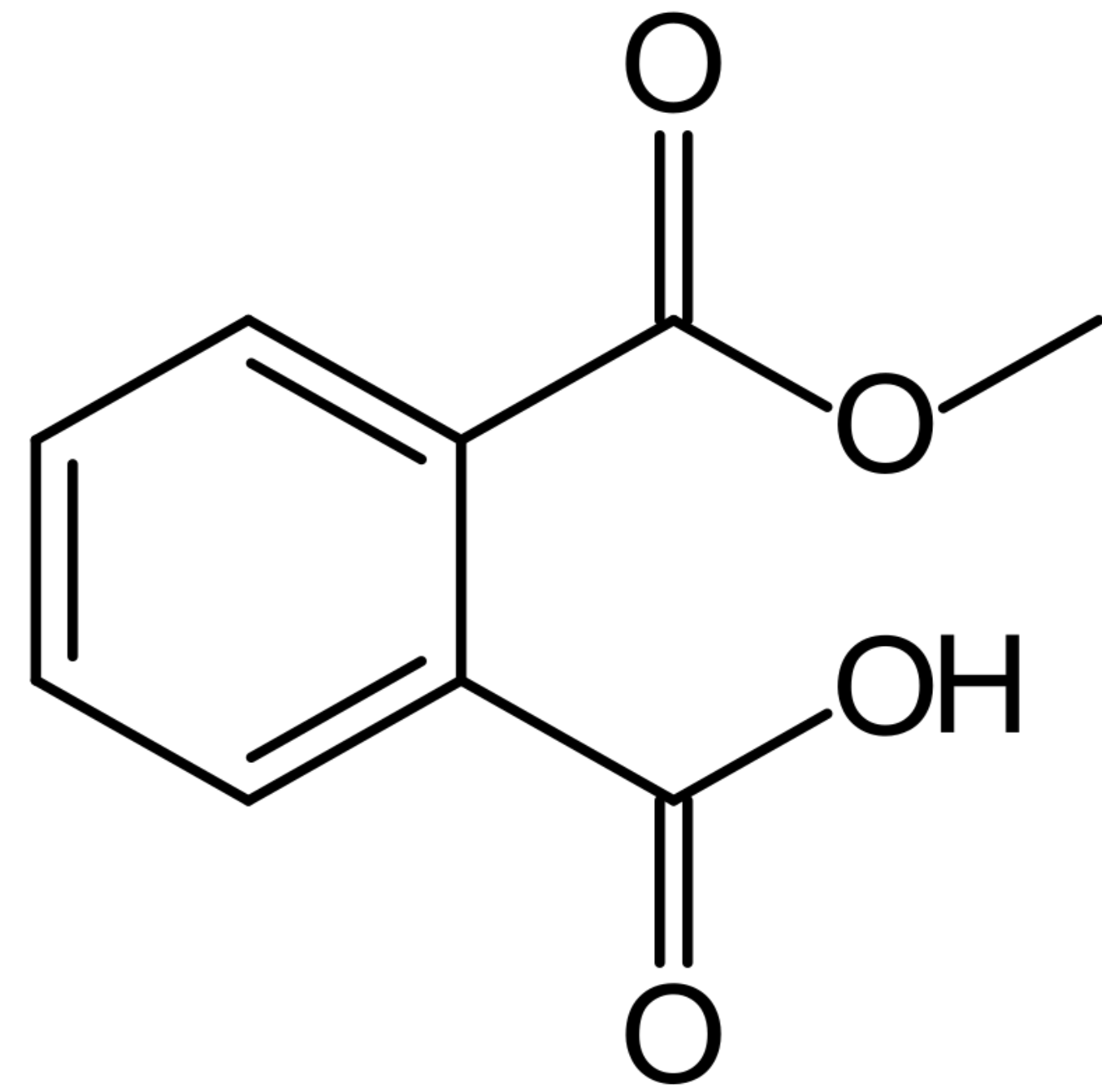


Figure 1: Monomethyl Phthalate

- Phthalates are additives which increase flexibility and reduce brittleness of plastics
- Phthalates can be found in products such as personal care products, medical tubing, and other plastic-containing materials people encounter everyday (CDC, 2021)
- Monomethyl phthalate (MMP) is a metabolite of dimethyl phthalate (DMP), one of the most common phthalates, which can interfere with biological processes (Dhanjai, 2018)
- Phthalates are linked to neurological disorders (Hlisníková et al., 2021)
- Phthalate exposure has been linked to attention-deficit/hyperactivity disorder (ADHD) in children (Kim et al., 2009)
- Flies are a model for exposure studies because of the availability, low cost, and rapid generation time (Tolwinski, 2017)
- The *Drosophila* Activity Monitoring (DAM) system is used to individually monitor flies for activity during to measure general activity, locomotion, and circadian rhythms

References

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Methods

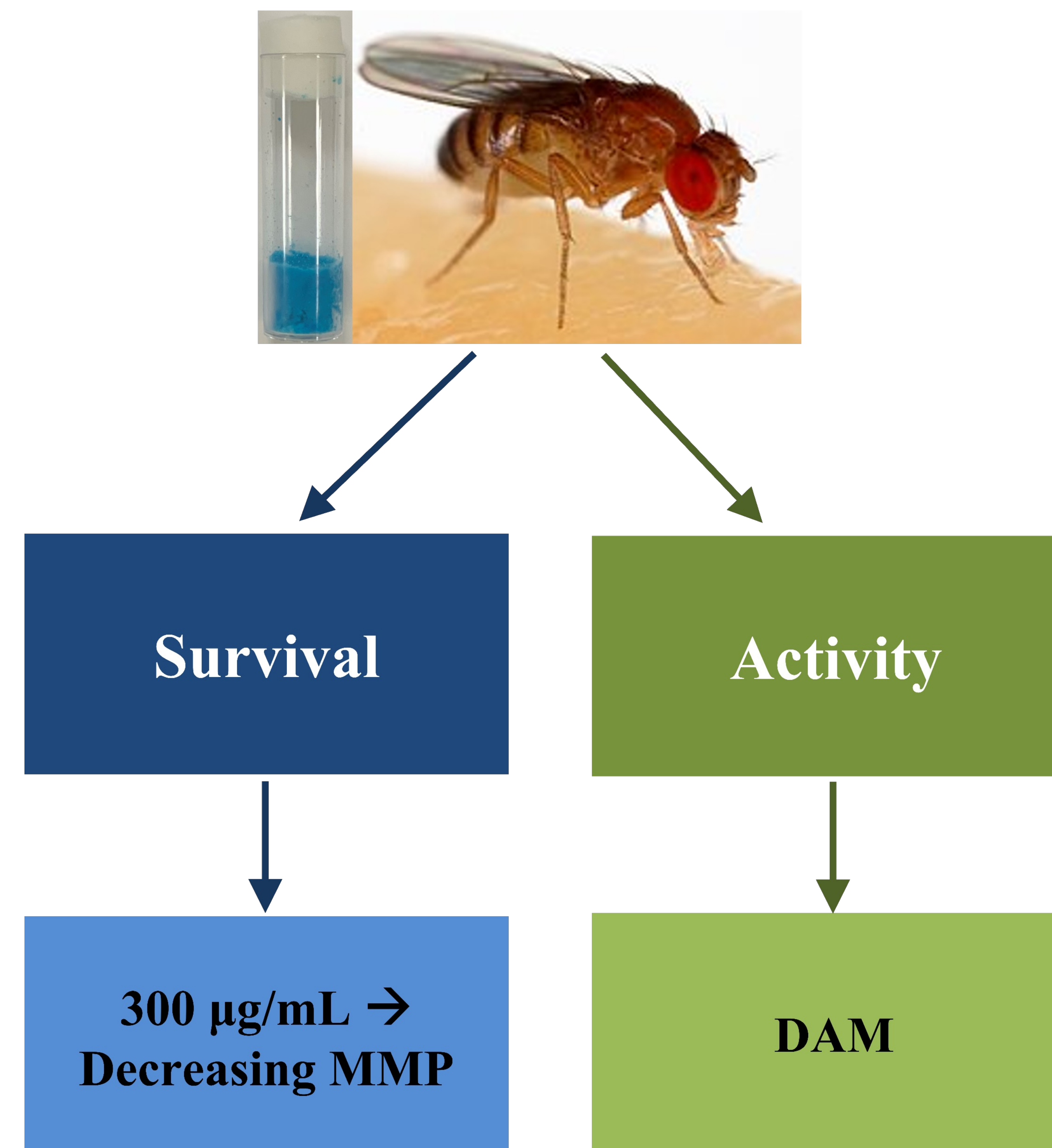


Figure 2: Methodology for studying the flies eating survivability by using a death curve (left) and future activity assessment using the *Drosophila* Activity Monitoring (DAM) system (right) to observe their behavior

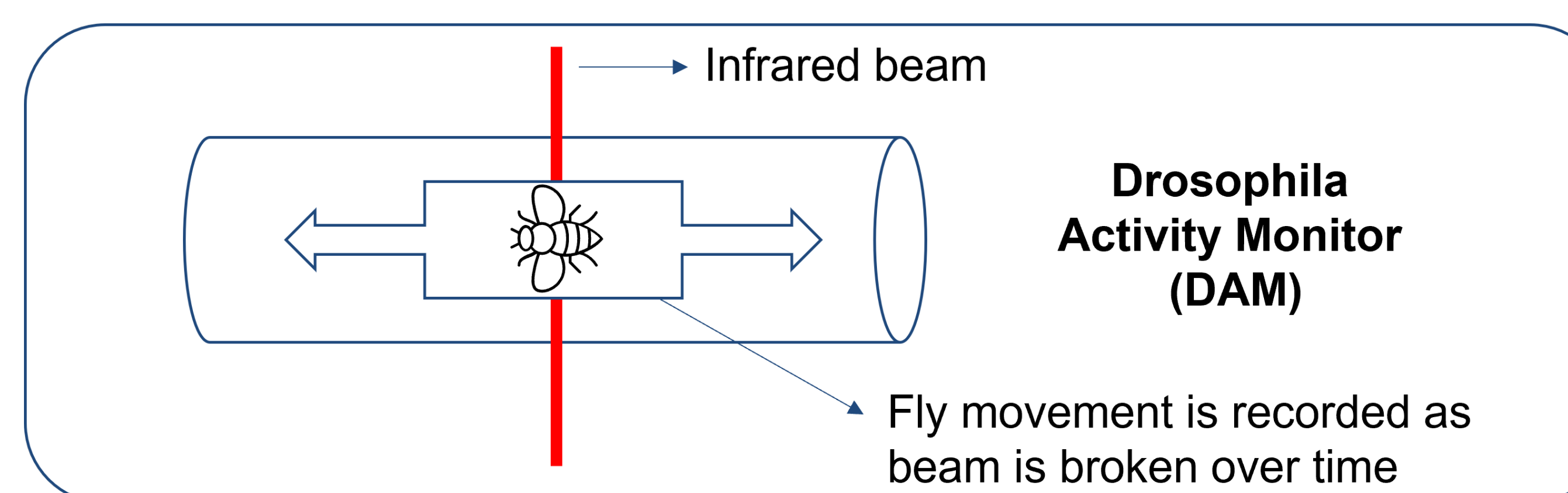


Figure 3: DAM Single unit. A full DAM system contains 32 units

Preliminary Results

- We hypothesized that exposing the flies to MMP will result in a shortened life span

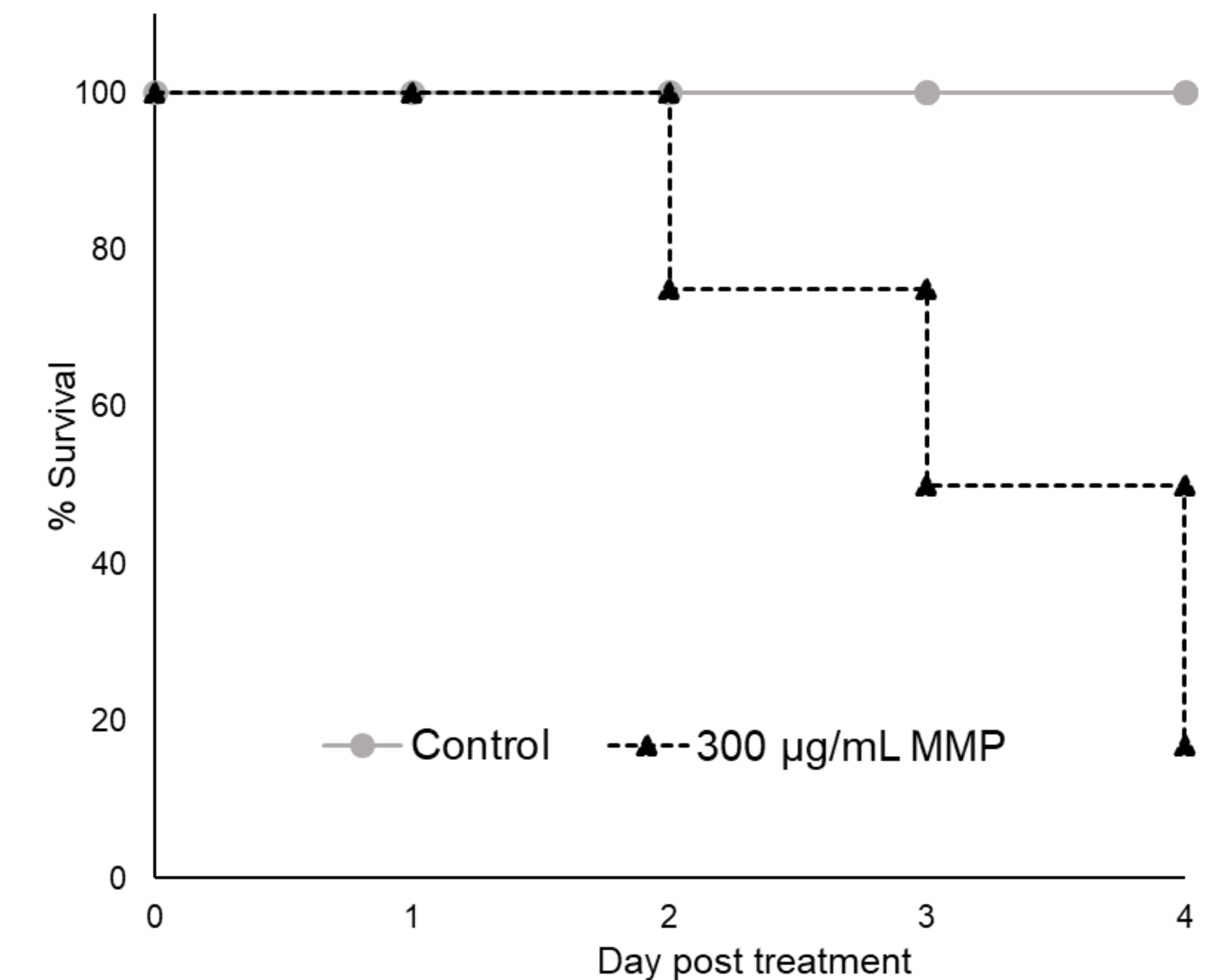


Figure 3: Death curve of flies on phthalates compared to flies on regular food (n=12-24 flies)

Future Directions

- Using DAM system for hyperactivity
- Additional research that can be collected includes sleep cycle, activity, and eating habit analysis
- Assess potential limitation that phthalates are sticking to the sides of glass or the vial
- Investigate route of phthalate exposure in flies

Acknowledgments

We gratefully acknowledge the contributions of fellow students Meghan Ashworth and Jackie Deaton. And, thank the College of Arts and Sciences for supporting our work