**Background**

- *Drosophila* are model organisms often used to further understand genetics (Benzer, 1971)
- 4 chromosomes
- Easier to study how genetics translates into behavior (Sokolowski, 2001)
- *Shaker* and *paralytic* genes encode the Shaker and Paralytic ion channels, respectively
- *Sh and parad* reduce expression of the channel, *Sh* nulls it
- Superoxide dismutase (sod) mutations affect the ability of the fly to metabolize toxic members of the Reactive Oxygen Species (ROS), linked to ALS, Huntington’s, and other neurodegenerative diseases

**Objectives**

- Understand and analyze the various behavioral effects of the *Sh, Sh*, *parad, sod*, TM6 (heterozygous), and *sod* (homozygous) mutations on both larval locomotion and eclosion

**Methods**

- Used a tracking method to test larval locomotion
  - Track speed, number or turns/backwards movements, and movement patterns of larva in the third instar larva stage
- Mated 20 males and 20 females and counted their offspring in both pupal and adult stages to compare eclosion success rates of each genotype
- Videocued eclosion behavior for sod mutants

**Results**

**Larval locomotion in ion channel mutants**

- *sod* homozygous significantly faster adjustment time
- Both *Sh* and *parad* significantly higher turning frequency and back movements
- *Sh* mutants significantly different

**Pupal count results**

- *sod/TM6: sod* pupae count ~4:1, suggests *Sod* larvae have difficulty making it to pupal stage
- *sod* heterozygous ~83% eclosion success rate
- *sod* homozygous ~28% eclosion success rate, suggests a behavioral change which makes eclosion difficult

**References**


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**Analysis of larval locomotion and eclosion behavior in ion channel and superoxide dismutase mutant *Drosophila***

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