Strain Specific Variance in Maximum Sustained Swim Speed ($U_{crit}$) Values in *Danio rerio* (Zebrafish)

Rachel Champaïgne, Kim H. Brown
Portland State University
Genetic Variation

- Genetic Mutations (Nuclear and Mitochondrial Genomes)
- Differential Expression
- Repeated Genes - Copy Number Variation (CNV)
Zebrafish as a Model Organism

- High Fecundity
- External Fertilization
- Robust and Adaptable
- Large amount of copy number variation
- What does variation look like in Zebrafish?
Zebrafish Rearing Conditions
Measuring Inherent Variation in Zebrafish: Variable Speed Swim Tunnel
Tunnel without extension 60 Hz WIK: http://youtu.be/fxcEk9ALH1Y
Modifications
Trials
Dissections and Laboratory Testing
Mitochondria

Cell; Mitochondria; Mitochondrial DNA
Mitochondrial DNA density in muscle tissue will be analyzed for individuals within each strain using quantitative PCR (qPCR).

Mitochondria average size and organelle density will be analyzed using immunohistochemistry antigens and imaging with a fluorescence microscope.
What’s Next?

- Test to see how Ucrit is affected by variable rearing conditions
  - Volumes and densities
  - Diets, including meat based, soy based (as a phytoestrogen), and regular plant based diets
  - Exposures
- Examine variance in mitochondrial density in different tissue types
References


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Image Credits

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Acknowledgements

Special Thanks To:

My Lab Mates; Alicia Chivers, Christina Yildimir, Josh Faber-Hammond, and Lindsay Holden
http://stage.pdx.edu/khbrown-lab/people

Dr. Thomas Hancock

The Ronald E. McNair Program

The NSF’s Research Experience for Undergraduates Program