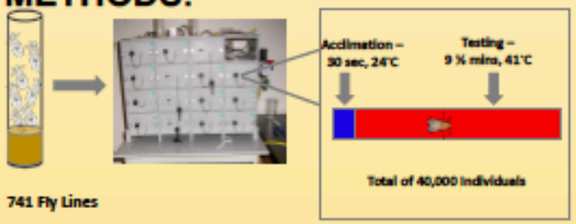
The Genetic Basis of Thermal Tolerance in a Multi-Parental Population of Fruit Flies

Presenter: Patricka Williams-Simon

BACKGROUND:

To understand how some individuals are better able to tolerate extreme temperatures, we must first identify the naturally occurring genetic variants that influence thermal tolerance.

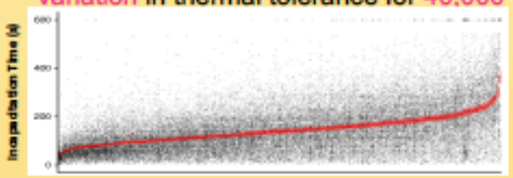
METHODS:



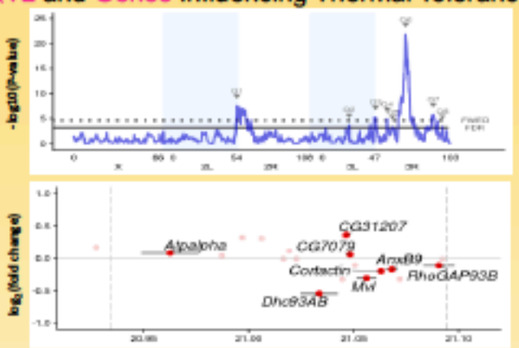
741 Fly Lines

RESULTS:

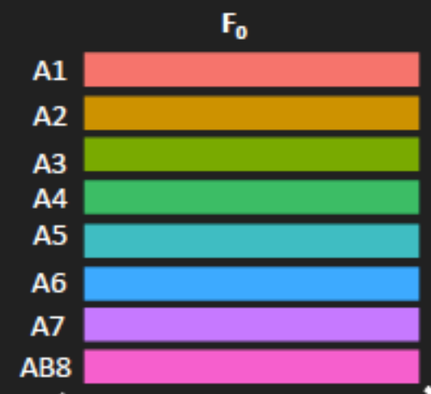
Variation in thermal tolerance for 40,000



QTL and Genes Influencing Thermal Tolerance



Withstanding High Temperatures Depends on the Variation in Specific Genes.



Colors = Low Thermal Tolerance

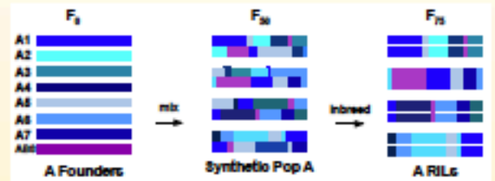
Colors = High Thermal Tolerance

Individuals with GREEN at a specific position would have LOW thermal tolerance

Individuals with PURPLE at a specific position would have HIGH thermal tolerance

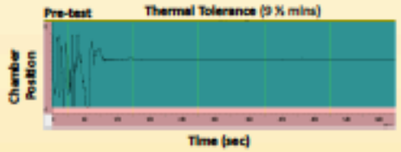
High Temperatures

Drosophila Synthetic Population Resource (DSPR)

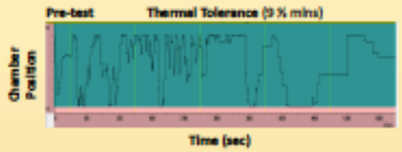


Position Traces of Fly

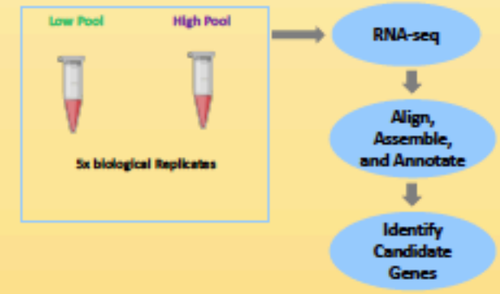
Low Thermal Tolerance Individual



High Thermal Tolerance Individual



Identifying Candidate Genes via RNA-seq



Author List:

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References:

- King, E.G., et al., 2012. Properties and power of the Drosophila Synthetic Population Resource for the routine dissection of complex traits. Genetics 191(3): 935 – 949.
- King, et al., 2012. Genetic dissection of a model complex trait using the Drosophila Synthetic Population Resource. Genome Research 22(8): 1558-1566.