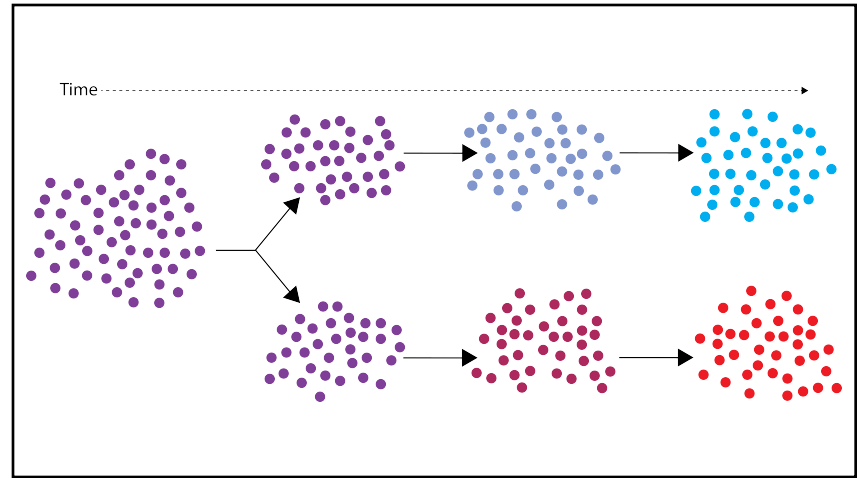
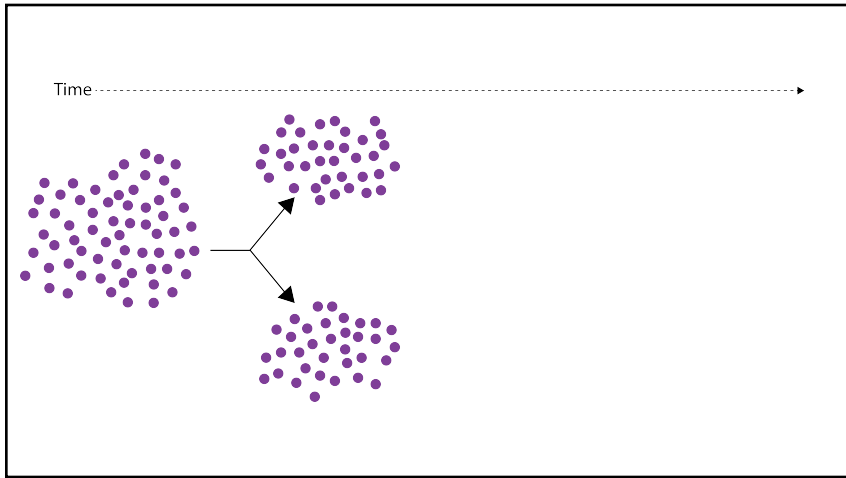
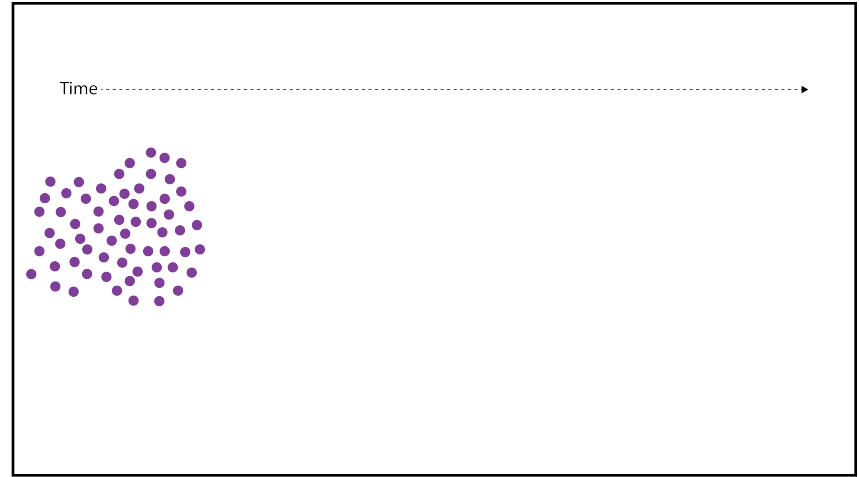
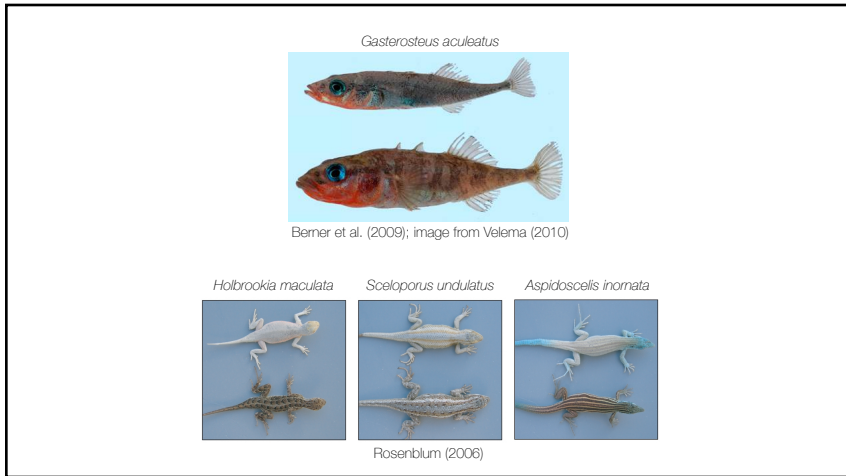
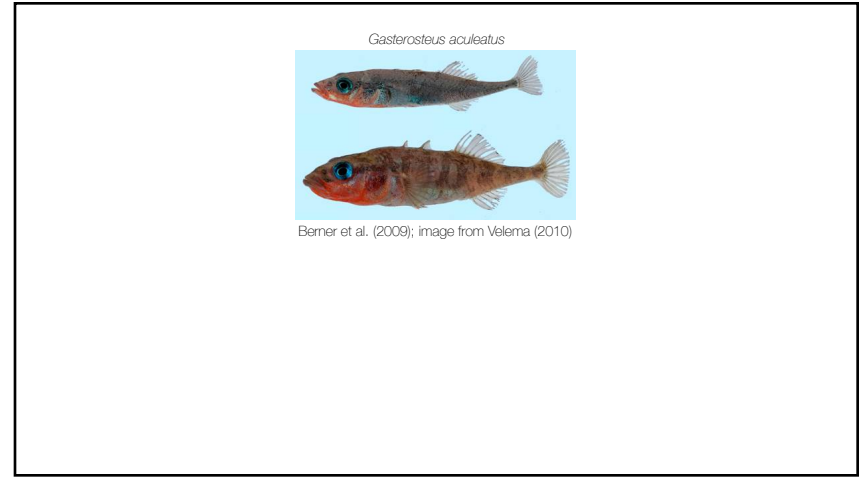
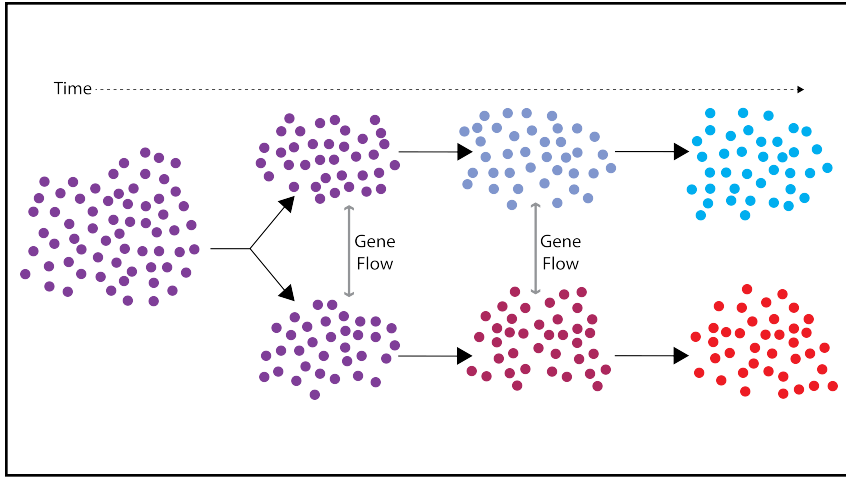


Chronic heat stress resistance in  
*Caenorhabditis remanei*

Sally Claridge

Christine O'Connor  
Dr. Patrick Phillips Laboratory  
Institute of Ecology and Evolution





Research Question

How do migration-selection dynamics affect population divergence?

Research Question

How do migration-selection dynamics affect population divergence?

$m < s \rightarrow$  divergence

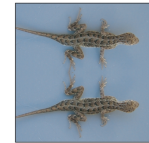


Research Question

How do migration-selection dynamics affect population divergence?

$m < s \rightarrow$  divergence

$m > s \rightarrow$  no divergence



*Caenorhabditis remanei*

Male



Sexual reproduction

Rapid generation time

Large populations

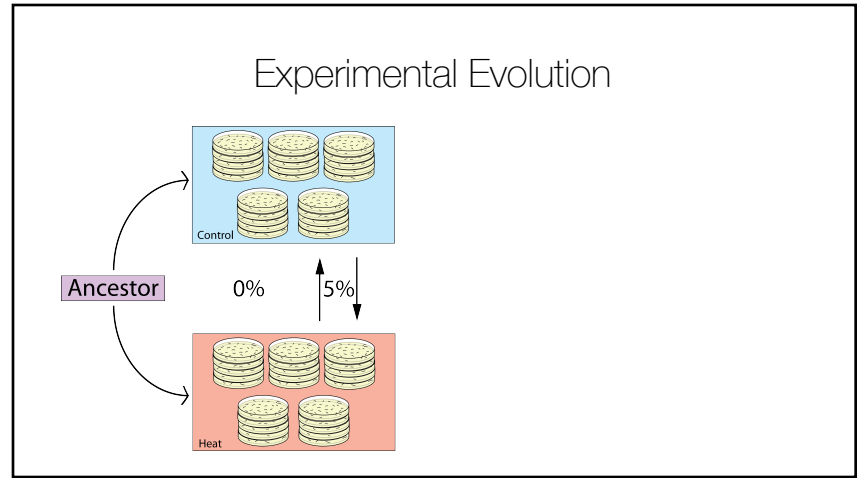
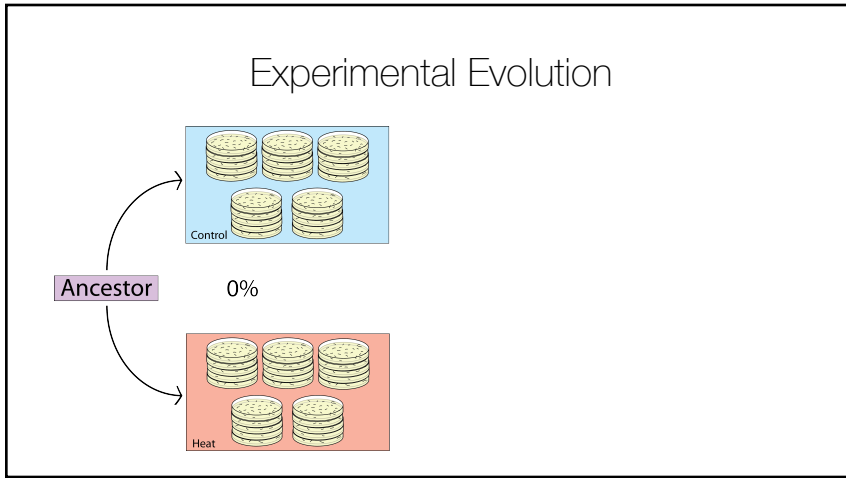
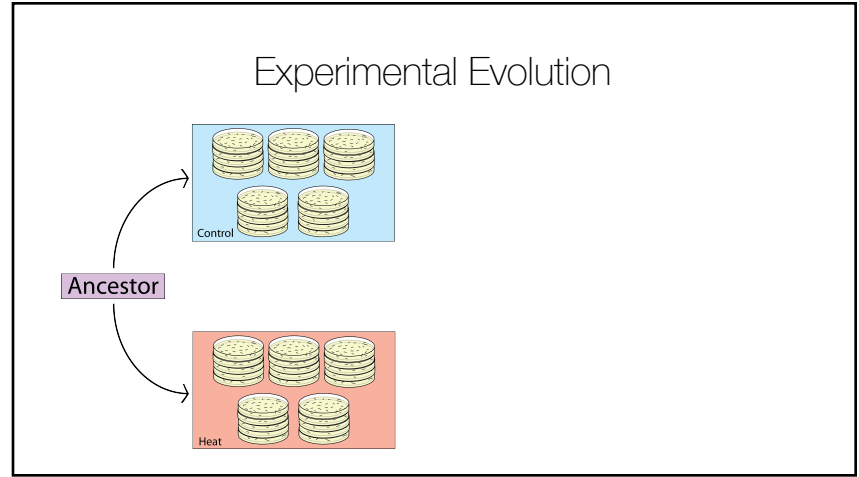
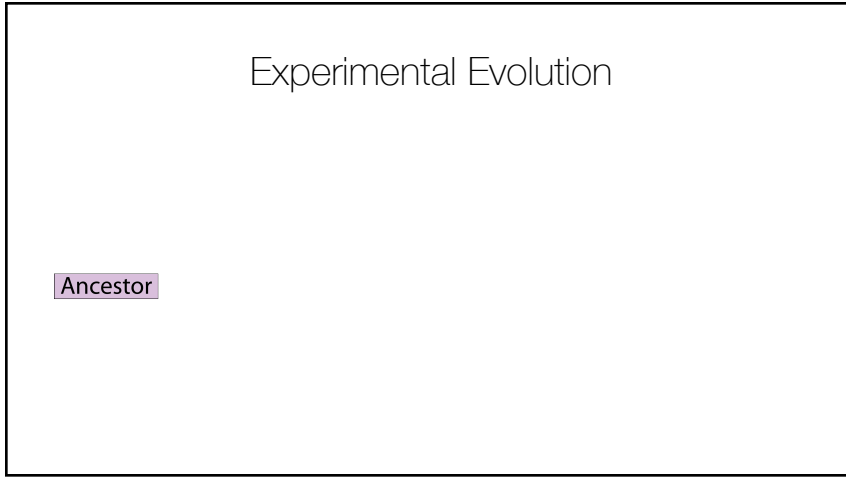
Freeze and thaw

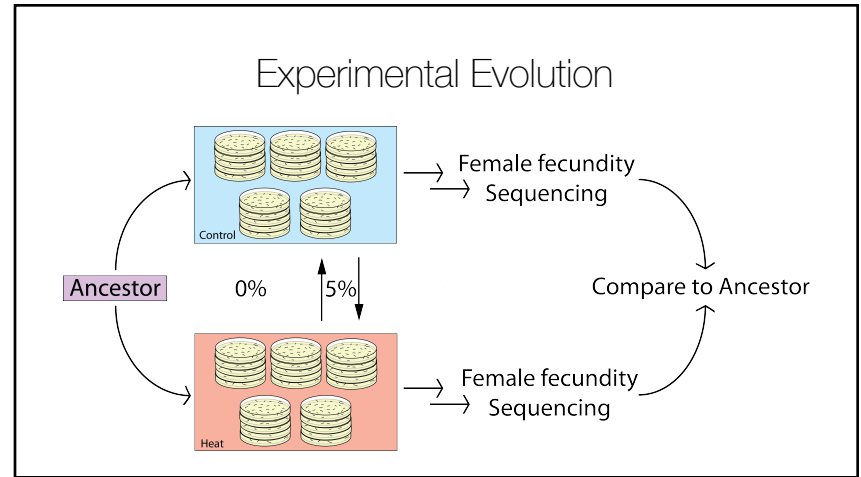
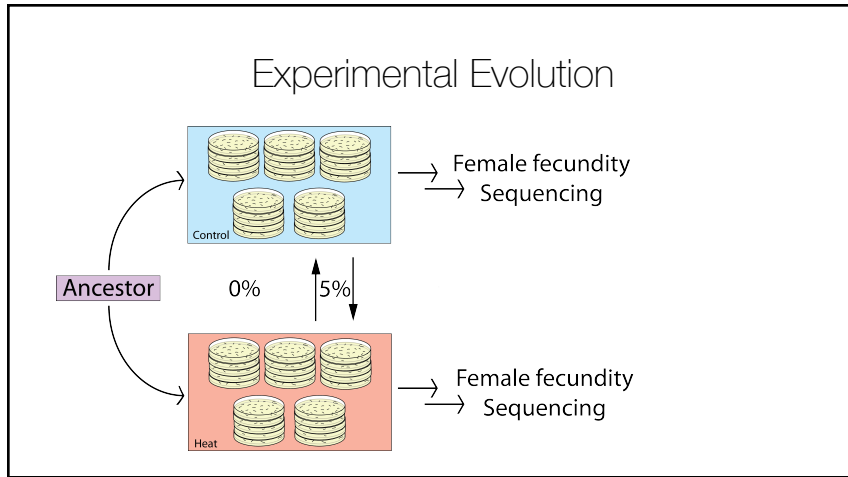
Female



Kristin L. Sikking

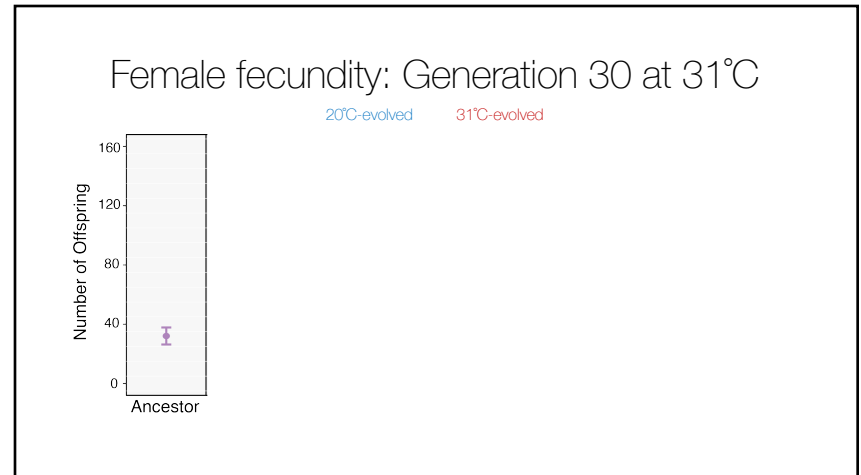
Experimental Evolution

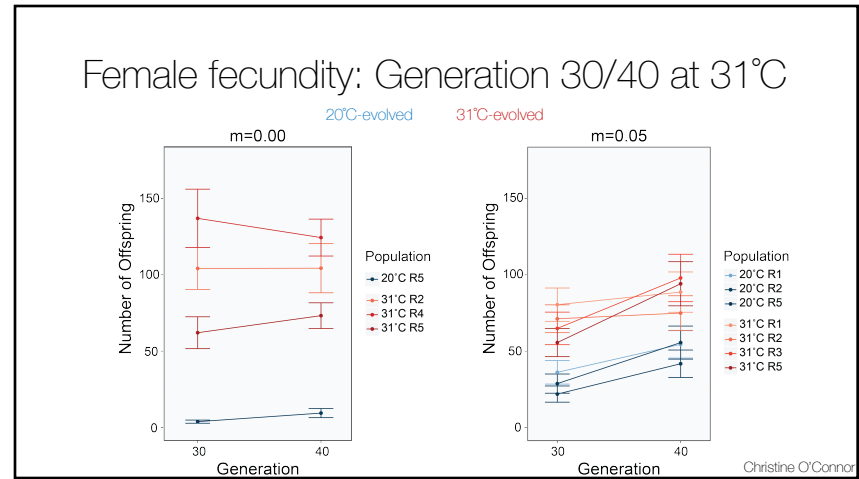
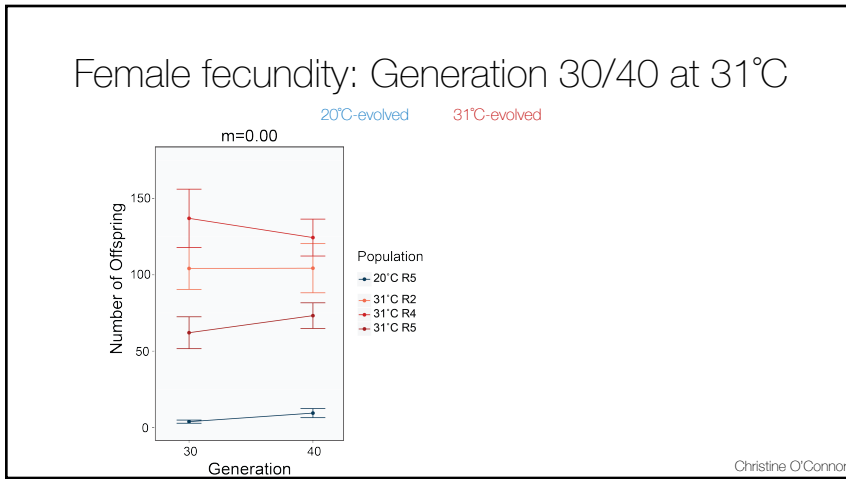
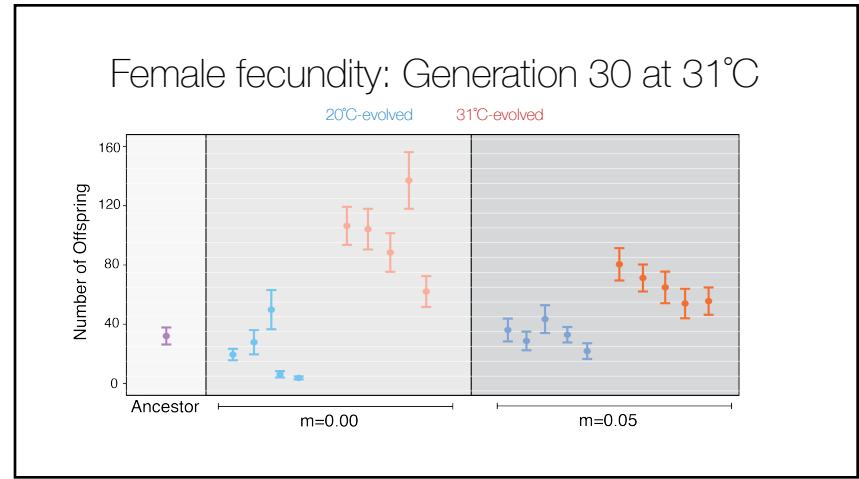
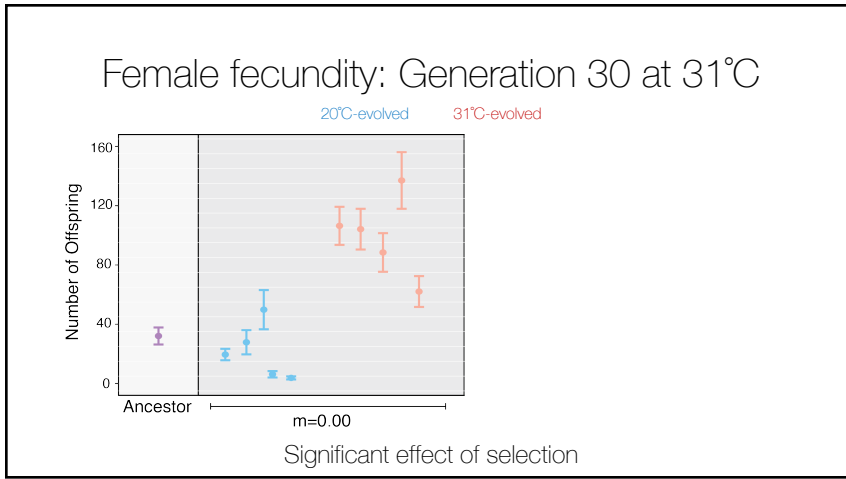




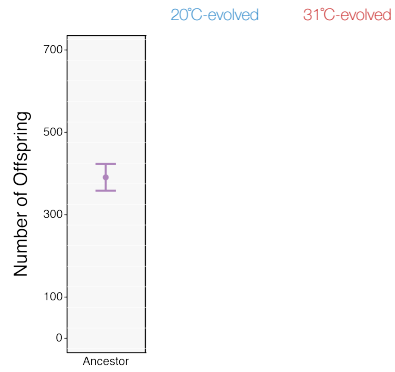
## Female fecundity: Generation 30 at 31°C

20°C-evolved      31°C-evolved

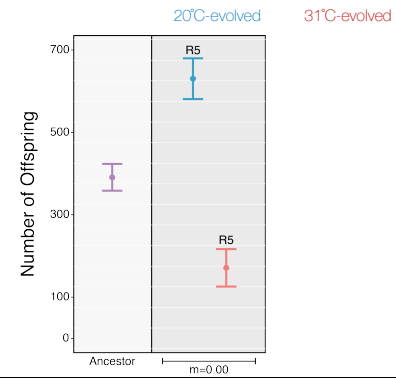




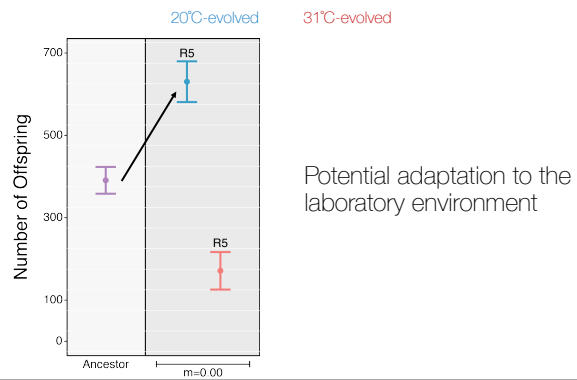
Female fecundity: Generation 40 at 20°C



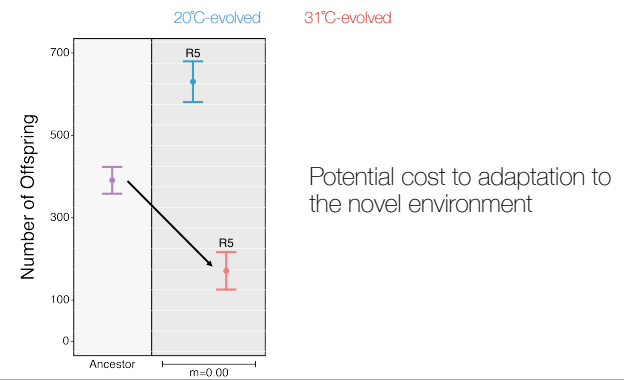
Female fecundity: Generation 40 at 20°C



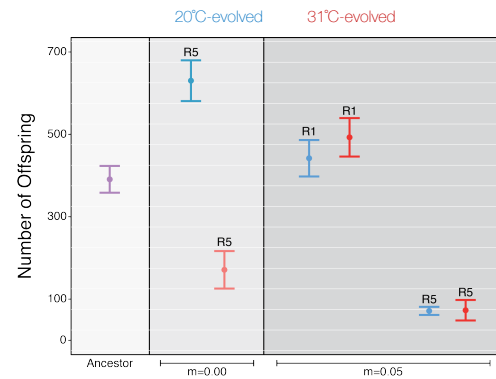
Female fecundity: Generation 40 at 20°C



Female fecundity: Generation 40 at 20°C



## Female fecundity: Generation 40 at 20°C



## Summary

5% migration rate slowed the rate of adaptation

Populations can diverge despite gene flow

Genomic analysis is forthcoming

## Questions?

Christine O'Connor  
 Dr. Patrick Phillips  
 Dr. Tyler Hether  
 Dr. Samantha Hopkins  
 Dr. Cristin Hulslander  
 Paula Berry  
 Phillips Lab Group



## Full Citations

Berner D, Grandchamp A, Hendry AP. 2009. Variable progress towards ecological speciation in parapatry: Stickleback across eight lake-stream transitions. *Evolution* (N. Y). 63:1740–1753.

Hug LA, Baker BJ, Anantharaman K, Brown CT, Probst AJ, Castelle CJ, Butterfield CN, Hemsdorf AW, Amiano Y, Ise K, et al. A new view of the tree of life. 2016;1(5):16048.

Páramo, S. Biodiversity conservation events from the 1960s through 2015. <<https://www.timetocast.com/timelines/biodiversity-conservation-events-from-the-1960s-through-2015>>. Accessed 2017 Feb 16.

Rosenblum EB. 2006. Convergent Evolution and Divergent Selection: Lizards at the White Sands Ecotone. *Am. Nat.* 167:1–15.

Velema, G. Vananda Creek Limnetic male (top left) and female (top right) and Benthic male (bottom left) and female (bottom right) sticklebacks. Figure. <[https://www.registrelap-sararegistry.gc.ca/default.asp?lang=En&n=42F1C425-1#\\_toc264979557](https://www.registrelap-sararegistry.gc.ca/default.asp?lang=En&n=42F1C425-1#_toc264979557)>. Accessed 2017 Apr 25.