

# How scared are fish?

## Influences of Social Status and Dominance on Predation Responses

Sophia Mckean\* and Nathaniel Klein\* \*contributed equally



### **Background**

Previous research has shown that there is a difference in predation responses between feral and domestic guppies (Swaney et al 2015). Additionally, it has been shown that changes in cortisol levels correlate with changes in social status in *A. burtoni* (Maruska 2015).

### **Big questions**

Do domestication and social status influence predation responses in *A. burtoni*?

## Hypotheses

1. Lab stock cichlids will exhibit less predation avoidance behavior in response to predator cues because they have faced less selective pressure for predator avoidance than wild stock fish
2. Dominant fish will exhibit less predation avoidance behavior in response to predator cues because they have more to risk if they do not show bold and aggressive behavior

## Experimental Design

- Conduct behavior assay to determine which fish in each pair is dominant
- Collect baseline cortisol samples
- Conduct behavior assay before and after predator cue added to tank
- Collect predation cue cortisol samples
- Determine cortisol levels using EIA and ELIZA techniques and protocols

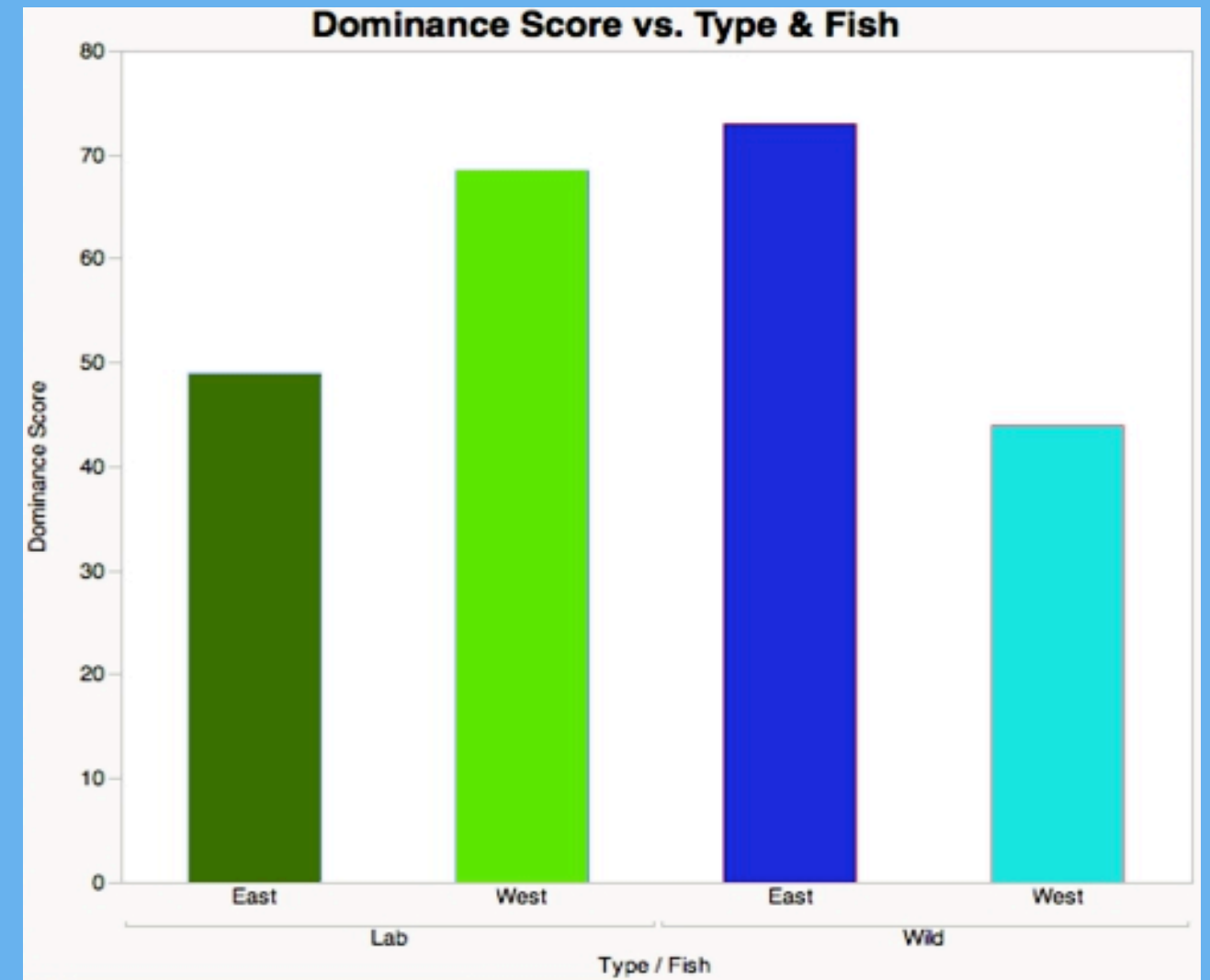
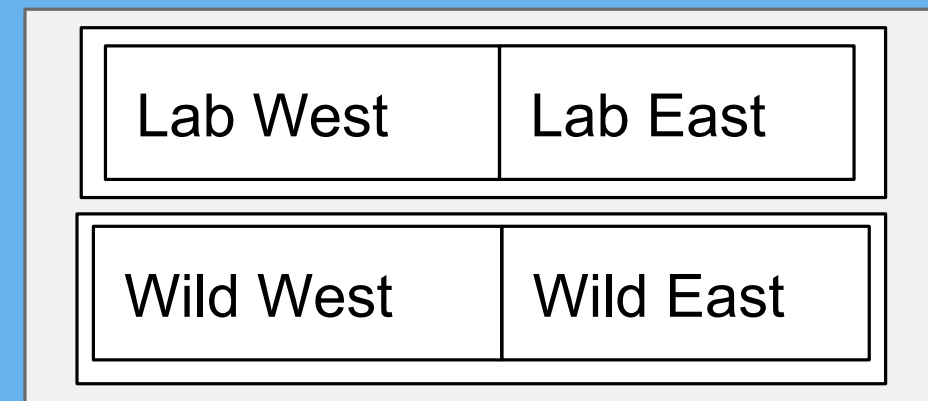
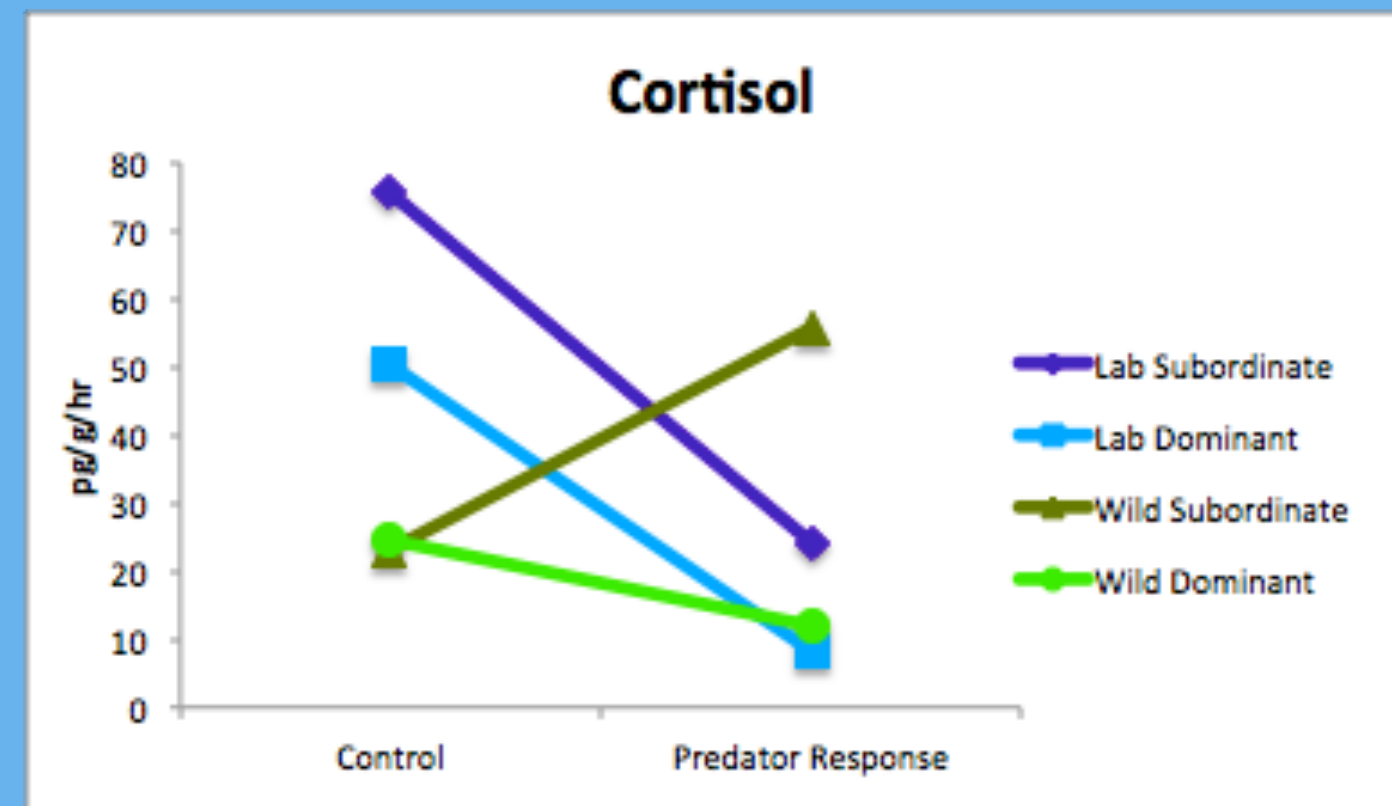
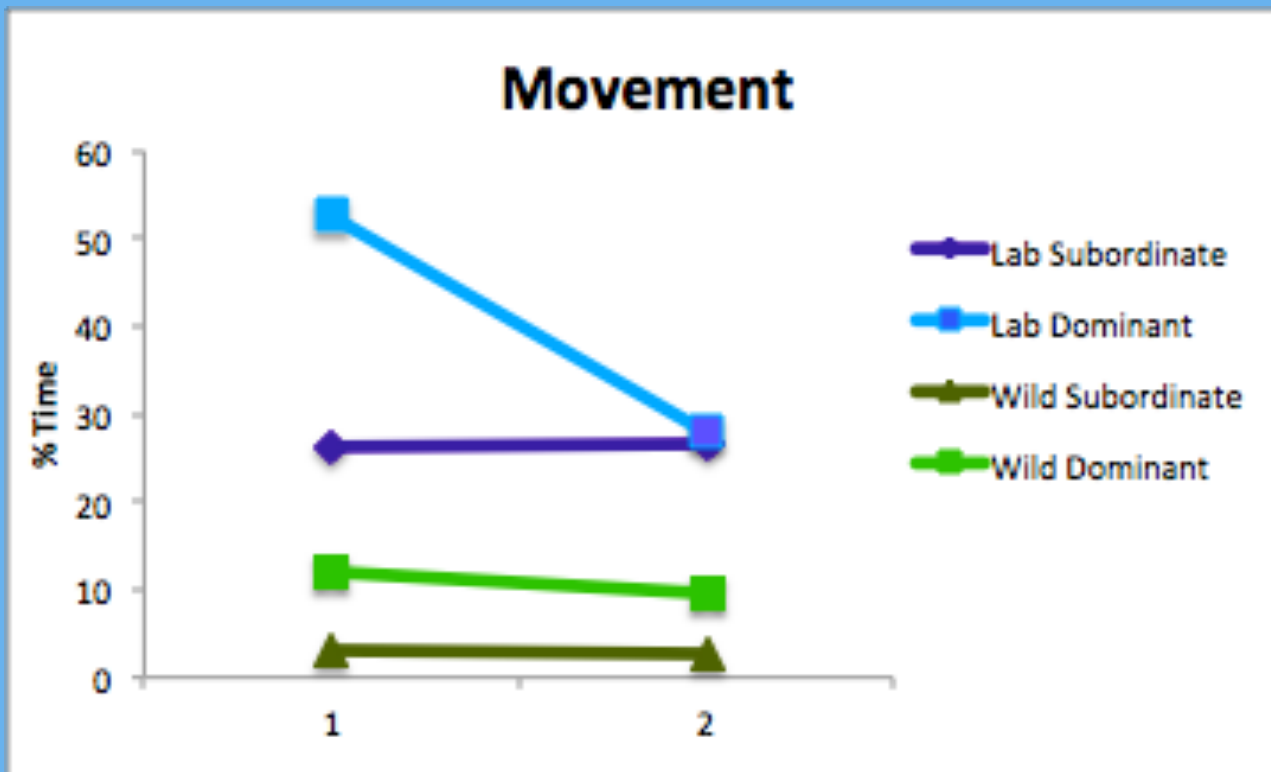


Diagram of the Fish Tanks Setup



**Results** Wild stock showed a higher increase in predation avoidance behaviors than lab stock (especially in hiding.) The role of dominance in predation avoidance behavior is not clear, although it appears that dominant fish froze slightly more than subordinate fish. Influence of dominance and domestication on cortisol levels were also inconclusive.



## **Conclusions**

Our hypothesis that domesticated cichlids would show less predation avoidance than wild cichlids was supported; we were not able to support our other hypothesis, or to correlate behavioral responses with cortisol level changes.

## **Future Directions**

Larger sample sizes should be used to see if these trends are supported.

Additionally, the influence of other hormones such as testosterone on predation avoidance behaviors could be investigated.

## **Citations**

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5. Swaney W, Cabrera-Álvarez M, Reader S. 2015. "Behavioural responses of feral and domestic guppies (*Poecilia reticulata*) to predators and their cues." *Behavioral Processes* 118: 42-4.

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