

Introduction

- The gut microbiome contributes to the health of its host through assisting in nutrient uptake and immune development
- It can also alter host behavior

Hypothesis

The diversity of the gut microbiome influences behavior through the immune system.

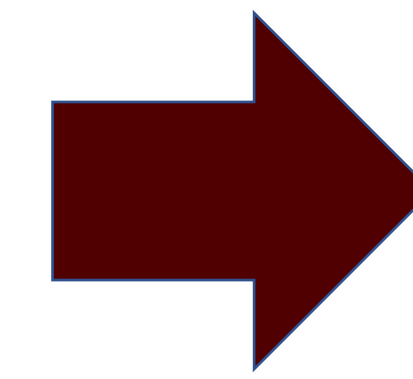
Predictions

Birds with more diverse gut microbiomes will:

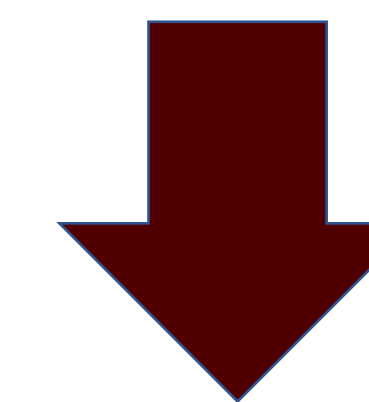
1. Have higher dominance status
2. Exhibit increased exploratory behavior
3. Have a stronger immune responses
4. Complete problem-solving tasks faster

Methods

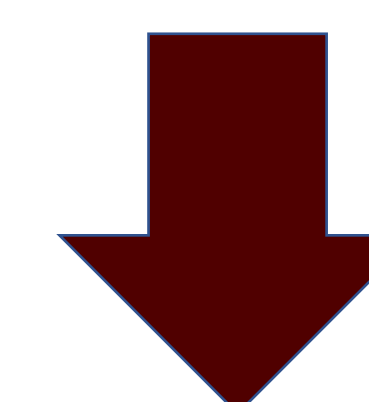
- 45 house sparrows
- Captured in Brazos Valley
- March-Aug 2020



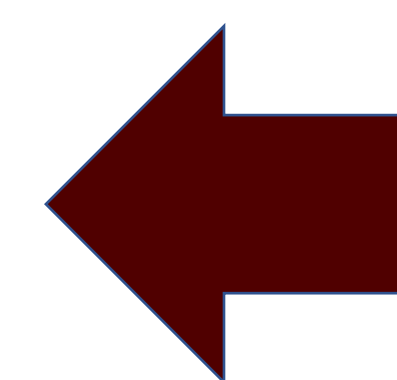
Collect fecal sample at capture for 16S rRNA amplicon sequencing



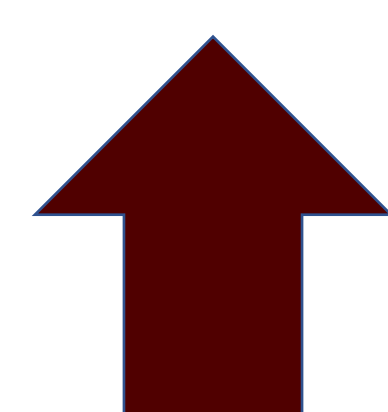
Measure male birds' "badge of status"



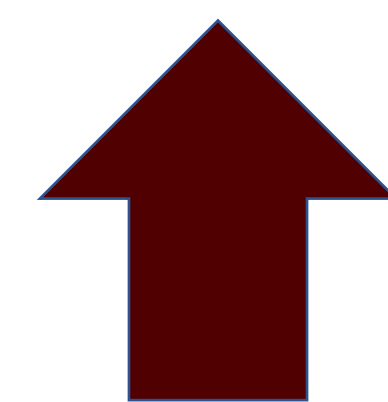
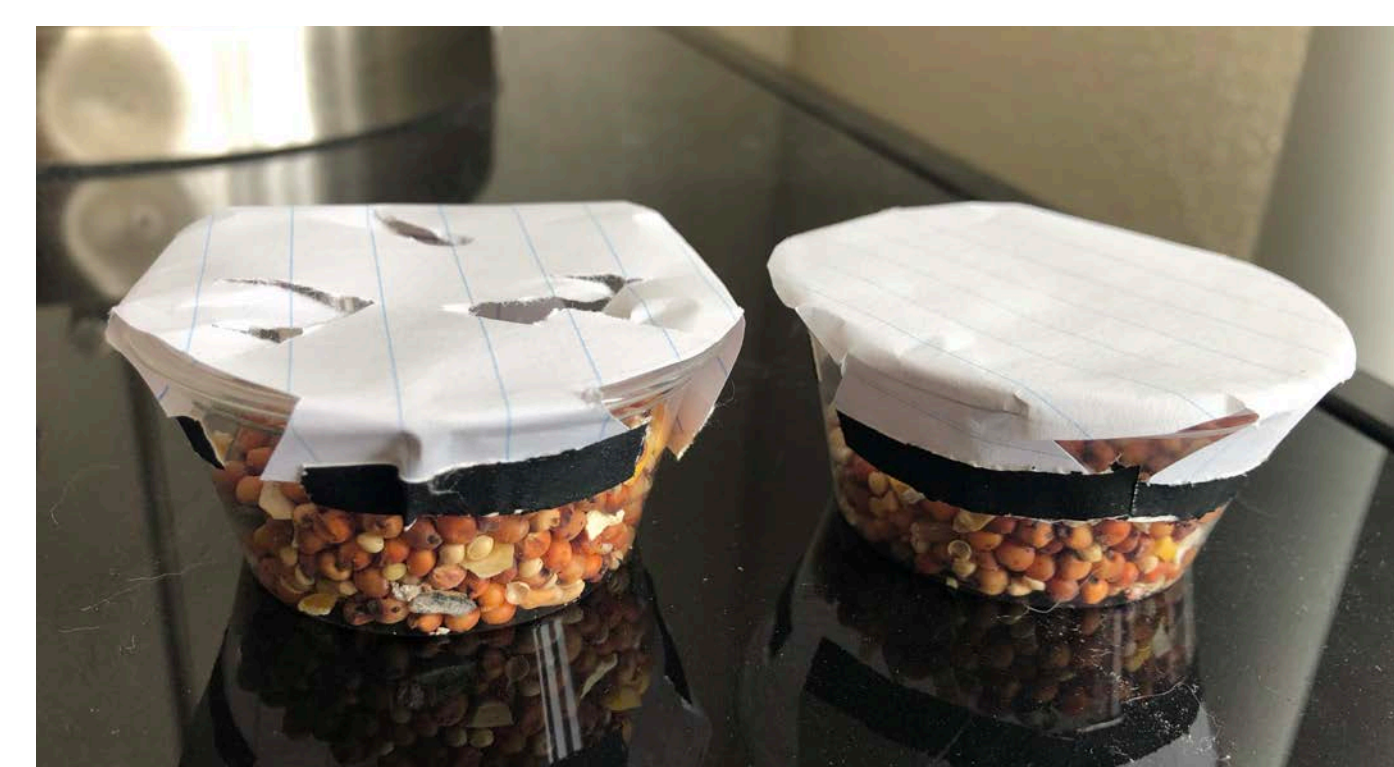
Measure exploratory behavior in a novel environment



Measure cell-mediated immunity with a PHA antigen

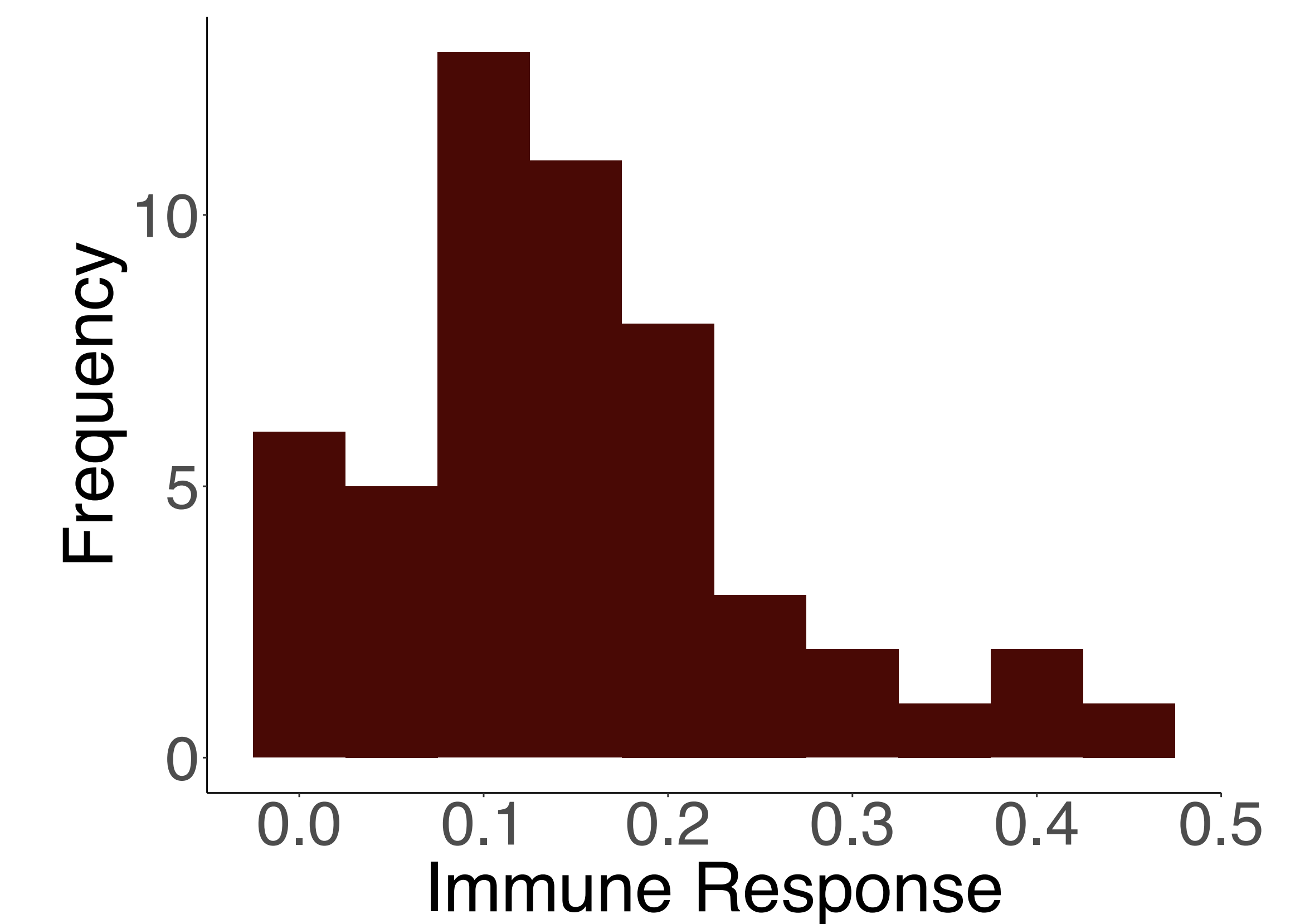


Measure latency to solve food puzzles



Collect additional fecal sample before releasing bird

Preliminary Results



We found individual variation in the birds' immune responses. Once we have the fecal samples sequenced, we will examine the relationship between the gut microbiome and the immune responses. We will also examine the gut microbiome's relationship to behavior.

References

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 Bokony, V. et al., 2014. Behavioral Ecology.
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