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# Betta Fish Reactions to Color: A Qualitative and Quantitative Analysis

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## Introduction

Research has shown that coloration is linked to aggression in male *Betta splendens*.<sup>[1]</sup> Aggressive and mating displays feature similar behavior (i.e.: gill and fin flaring).<sup>[2]</sup> We studied the connections between mating, aggression, and coloration in male *Betta splendens*.

**Hypothesis:** Males will be more aggressive toward males of a different color and will have more courtship displays for females of the same color.

## Literature Cited

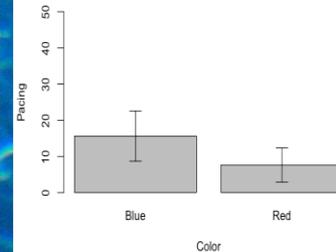
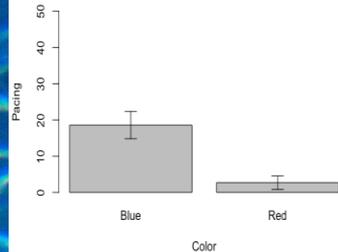
- 1) M. G., Conn, A., & Reid, G. (n.d.). Color and Territoriality are Linked to Aggressive Behavior in Male *Betta splendens*. Retrieved March 28, 2019
- 2) Simpson, M. J. A. "The Display of the Siamese Fighting Fish, *Betta Splendens*." *Animal Behaviour Monographs*, vol. 1, 1968, pp. 1-73., doi:10.1016/s0066-1856(68)80001-9.

## Methods

Each male was exposed to an image of a female of the same and opposite color. Each male was exposed to other male individuals of the opposite color via outside container (i.e. beaker). We placed a mirror against the side of the tank of each male to observe the number of aggressive displays toward a fish of the same color. All the aggression data was analyzed through multiple two-sample T-Tests in R-Studio

## Results

- No significant differences for gill and fin flaring for males of the same and opposite color.
- Significant difference for pacing when red and blue males acted as intruders. P-values= 1.056e-07 and 0.01891, respectively. Fig. 1 & 2
- No significant results for aggressive displays and non-conspecific



Figures 1 and 2 show our only significant data, in which blue *Betta splendens* are shown to pace more than red *B. splendens* when either color fish is the intruder.

## Discussion

- We noticed the striking behavior mentioned in Simpson's paper
- When we took data on mating displays, we noticed that only one blue fish made a bubble nest, but all other mating signs were present in all fish
- Our results do not align with the results of other research we have found
- Further research could include a larger sample size and more colors of fish

