

# Are Growers Worse Showers?

How unknown growths affect courtship displays in guppies (*Poecilia reticulata*).

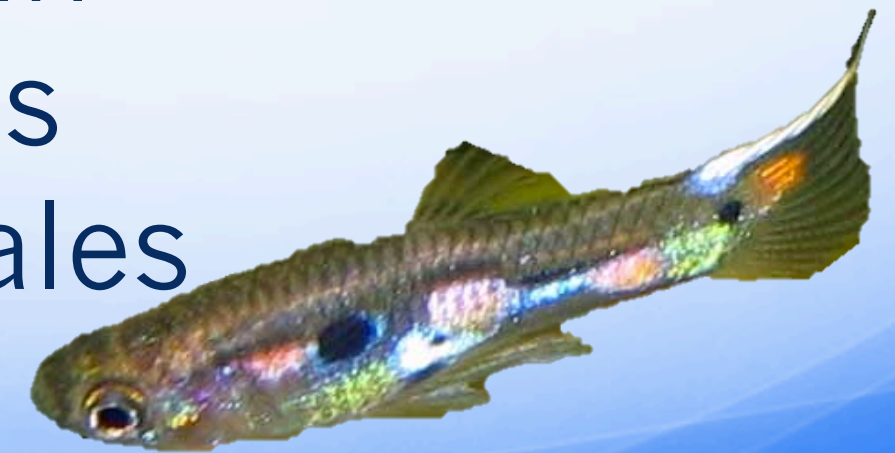
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During previous research on guppy courtship displays, unknown growths were observed but their effects were assumed to be insignificant. We decided to test this assumption.

Previous studies (1) have shown that infection load (parasitic) correlates to decreased sexual display behavior in guppies. This finding, along with the physical prominence of the unknown infection in our lab's guppies, led us to the following hypothesis:

We expected to see fewer displays in infected males than wild-type males and fewer displays to infected females than wild-type females.



[http://www.aquahobby.com/gallery/img/Poecilia\\_reticulata\\_2.jpg](http://www.aquahobby.com/gallery/img/Poecilia_reticulata_2.jpg)

# Experimental Design and Results:

Ten infected and ten wild-type males were paired with infected and wild-type females (in random order) in an experimental tank (2). The number of male displays were counted using JWatcher for each five-minute experimental trial.

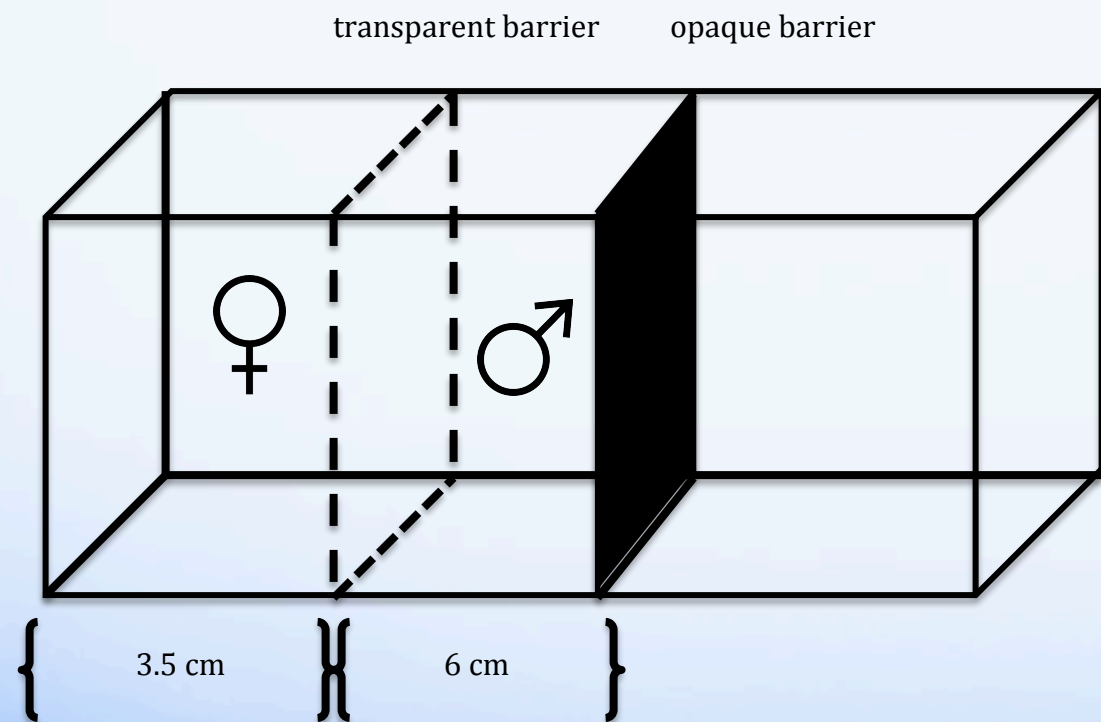


Figure 2. Experimental tank diagram.

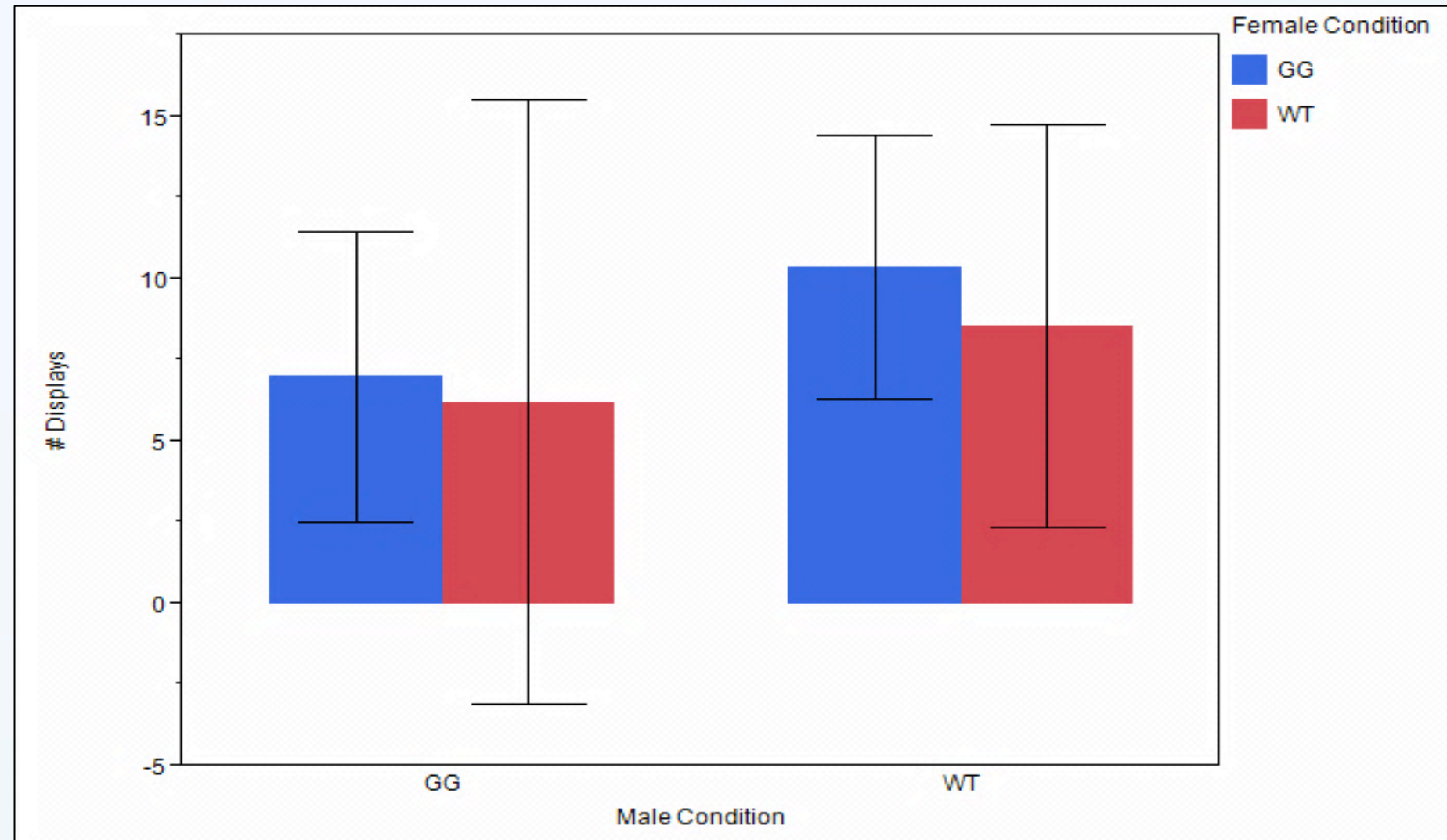


Figure 1. The average number of male displays in each five-minute test (wild-type [WT] vs. growth-infected [GG] and male vs. female) with overlaid 95% confidence intervals across the forty experimental pairings.

<http://www.jwatcher.ucla.edu/>



# Results Continued:

The proportion of body area covered in growths was quantified using ImageJ to create a continuous % Male Growths variable.

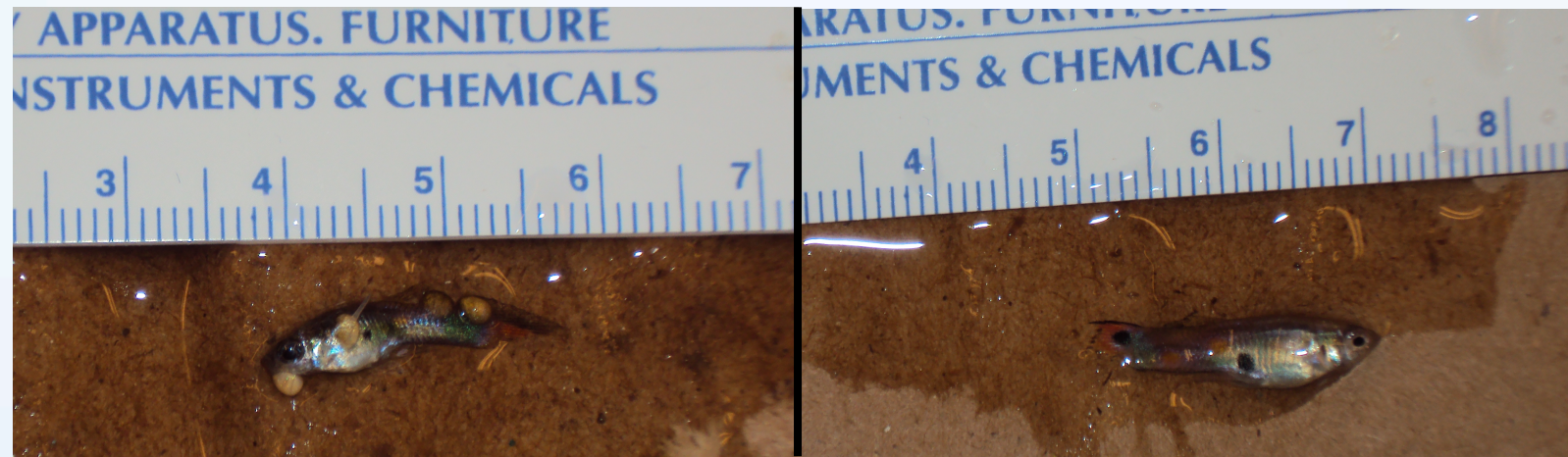


Figure 4. Images of infected(GG) (left) and wild-type(WT) (right) male guppies to be processed in ImageJ.

[rsb.info.nih.gov/ij/](http://rsb.info.nih.gov/ij/)

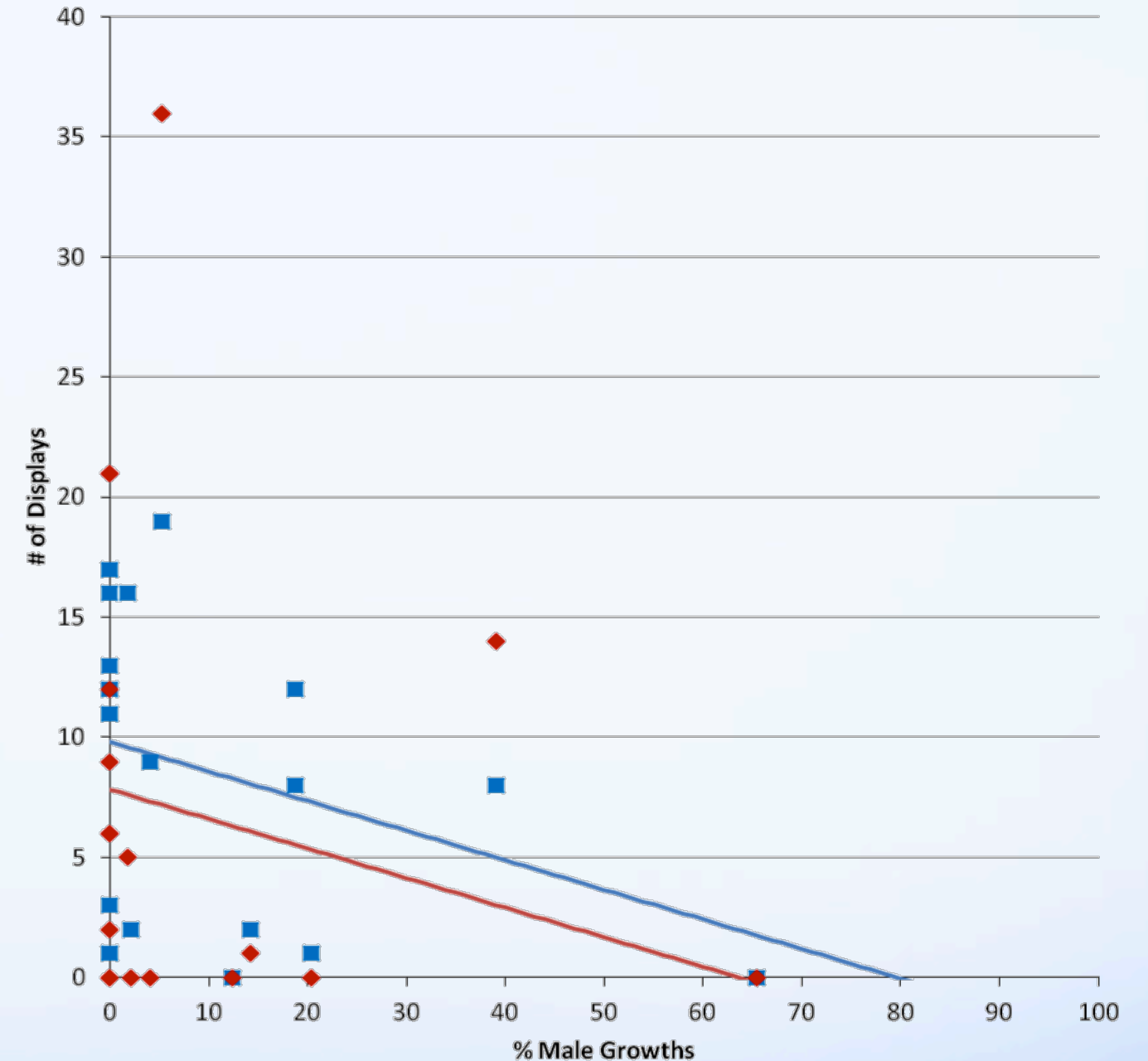


Figure 3. Visual representation of a linear model constructed in R (# Displays vs. % Male Growths and Female Condition). Neither % Male Growths nor Female Condition had a significant effect on guppy displays ( $p = 0.126$  and  $0.617$ , respectively). Tests and the model involving females with growths are shown in blue, while tests and the model involving females without growths are shown in red.

# Conclusions:

We did not find a significant correlation between growth coverage (% of body area) in males and number of courtship displays or between female condition and number of received displays.

# Future Research:

- It is possible that with increased sample size (both in count and in population), significance of the variance in courtship behavior could be found.
- Significant correlations between extent of infection and additional behaviors (boldness, agility, etc.) could be found following measures of these behaviors with similar measurement of infection.

## References:

- (1) McMinn, H. (1990). Effects of the Nematode Parasite *Camallanus cotti* on Sexual and Non-Sexual Behaviors in the Guppy (*Poecilia reticulata*). *American Zoologist*, 30(2), 245-249.
- (2) Gross, M.R., Suk, Y.Y., Robertson, C.T. **2007** Courtship and genetic quality: asymmetric males show their best side. *Proc. R. Soc. B*

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