The relationship between fluctuating asymmetry and male mating behavior is still little-studied, and new information about this relationship could have strong implications for the study of mating behavior more broadly.

**Poecilia reticulata** as a test organism
- Common, easily accessible
- Fluctuating Asymmetry has been proposed as an influencing factor in guppy mating behavior (Gross et al. 2007, Amcoff et al. 2009).
- Easy to handle and observe
- Variable in appearance

To what extent is behavioral lateralization as a response to color lateralization in guppies ontogenically based?
Materials and Methods

Treatment

Ten Guppies were kept in two tanks over the course of two weeks. One tank contained a live female, and the other contained a dummy.

Observation

After two weeks in the tank, the two remaining guppies, Rick Blaine and Victor Laszlo, were placed in observation tanks with either a live female or the dummy. They were scored for each instance of a mating display to the left or to the right. They were then photographed on both sides.

Analysis

The data were analyzed using JMP and the photographs were analyzed using ImageJ. Each observation period was assigned a behavior lateralization ratio and each guppy was assigned a color lateralization ratio.
**Experimental Design and Results:**

In the early years of Snuffy's entrances were scored by a low-range brass musical cue.

**Hypothesis:** If the ratio between functional asymmetry (FA) and behavioral lateralization is a learned trait, then prolonged exposure to an unresponsive female should result in a partial loss of the ratio.

**Guppies Spent Two Weeks With**

<table>
<thead>
<tr>
<th></th>
<th>Behavior Lateralization</th>
<th>Color Lateralization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dummy</td>
<td>Number of Right-Side Displays / Number of Left-Side Displays</td>
<td>%Orange on the Right Side / %Orange on the Left Side</td>
</tr>
<tr>
<td>Live Female</td>
<td></td>
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</tbody>
</table>

**Figure 1:** The mean ratios between behavior lateralization and color lateralization of the two experimental groups. Brackets represent 95% confidence intervals for the two samples.

Behavior lateralization = Right-Side Displays / Left-Side Displays.

Color lateralization = %Orange on the right side / %Orange on the left side.

| t-ratio | Prob>|t| |
|---------|--------|
| Dummy   | -3.06  | 0.0085* |
| Live Female | 10.24  | <0.0001* |
We Conclude that:

The question merits further study.

Caveats to the Results

1. The model female guppy didn't look all that much like a guppy, and it's possible that it did not serve its intended function as a non-responsive female guppy.
2. Most of the guppies died mid-way through the experiment, so the sample of individual guppies was very small. The small sample of guppies had an especially large effect on this study because it gave any change in behavior lateralization a much greater effect than it would have otherwise had. It would be imprudent to draw conclusions from this study without a follow-up study with a broader sample of individuals.

References:
(1) http://en.wikipedia.org/wiki/Guppy

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Suzy and the Stockroom Staff, for supplying the necessary pieces and information to make the model female
Animal Crossing NW, the Woodstock Blvd. pet store, for supplying the guppies
All nine of the guppies who gave their lives for science. They will be missed.