**Peer Review Guide** (see also this helpful page: <https://plos.org/resource/how-to-write-a-peer-review/>)

Here’s a guide to doing a good review. You can follow this or do your own thing. This guides you through a review in three parts, each successively more specific.

**First**, a brief summary of the paper’s aim and your impression of its overall success. This is where you put your big-picture impression of the paper as a whole.

**Second**, the major issues with the paper. You should, **at a minimum**, address:

(1) is the hypothesis being tested *interesting* and *evolutionary*? Is it *novel*? Double-checking their cited literature (even just a quick skim) to confirm that they’re not replicating too closely something already done is very helpful. It’s easy to accidentally re-invent the wheel since the data are (for most of you) coming from previously published sources. **This draft should not be a review or summary**. It should be focused on the results the author found, and not dwell too much on other papers. Referencing other papers and findings is good, but a paper that is *too* referential, a paper that doesn’t stand on its own, is not the ideal.

(2) are the data as-described appropriate for testing the hypothesis? That is, if the author says that they’re testing the effect of ecology on fitness, and their data are the location of a bird’s nest and how fast the bird can fly…that doesn’t really match. Both of those are loosely related to ecology and fitness, sure, but you can’t directly test it with those data at all.

(3) are the data *really* how they’re described (e.g., if I write that I’m testing body size, but I’m really using the length of the femur, does that change the stated interpretations of the analyses?) Double-checking that their sources describe their data as-is is a particularly helpful thing to do here. **Do the graphs make sense** is probably the biggest thing here. I would recommend looking at the graphs first, thinking about them, then reading the text. Don’t necessarily trust p-values—unless you have a really firm grasp of the exact statistical mechanics behind each test done, trust your instincts from the graphs. Graphs > pvalues. Hard to read or interpret graphs are **very bad**. The author should explain each graph clearly and it should make sense in the context of what they’re doing.

(4) are the analyses appropriate? That is, did the writer use their data in a manner that truly tests their stated hypothesis, or are there some problems either with implementation or interpretation?

(5) are the interpretations correct? Did the writer correctly interpret their graph(s) and statistical test(s), or are they drawing unsupported conclusions? Are there unaddressed issues?

All data sets are flawed. As are all statistical analyses! If the author discusses weaknesses in their approach, that is ***good***. But if there are weaknesses that they’ve overlooked, your job is to point those weaknesses out to them so that they can either correct the weakness (if possible), or explain how any such weaknesses might impact their interpretation of their results.

**Third**, any specific issues that you see. Are there sentences that don’t make sense? Are there typos? Are there individual places where the author makes conceptual leaps that aren’t quite backed up by the data? This third area is where you let the author know any individual places that need to be adjusted. This is the least important of the three parts.

Finally, remember that the author of your paper is going to read what you write! The only thing I’ll remove is your name. They won’t know who wrote it, but everyone in this class has worked hard.

Be kind, be respectful, and be helpful.

**Your (Reviewer) Name:** Nicole Kester

**Name of Author:** sainted eidolonhelvum

**Summary**

Overall I feel like all the requirements for the paper were met. You explained what you were testing and how the data was collected, described the experiment very well, your graphs were easy to read and clearly showed the data that you had collected, you interpreted the data that you found and had a very concise conclusion. I would go into more detail in your discussion/conclusion on how what you found could be considered evolutionary.

**General Comments**

What significance does color preference have on these flies? Like yes you found that they were selective of what color they land on but what do these implications mean? In the introduction section, I would include a paragraph describing what you are going to be testing and why you are testing it. The results section I would use sentences to describe the results, I am not sure if you have to do this or not, but I feel like it will make it easier to interpret if it is in sentence form and not just in table form. This may be redundant, but I feel like having more than just one sentence to describe each figure would be better.

Your hypothesis I think is interesting but to really see if it is evolutionary I almost feel like other species of flies should have also been tested to see if the structure of the eyes change which color they prefer. Is this what the phylogenetic tree is showing, different species that were tested? If not, I am not sure if the tree is necessary or not. If it is saying there are different species being tested, I think you should talk about that a little more and maybe discuss the differences in the species of flies and then also talk about the overall biting flies as well. I also am a little confused on how you can tell that the structure of the eye is what is causing them to be selective – is there any research showing that the structure of the eye is what causes them to choose colors that absorb light more frequently? To test this I think that if you include another species of flies or some other insect that has a slightly different structure of the eye and then compare to see if the structure of the eye is what is actually causing them to be selective or not. Maybe mention that the structure of the eye has some implication of how much light can be reflected and say that with the structure of their eyes then it is thought that they would choose black or brown or colors that do not reflect a lot of light. Then say that because the results support this then it suggests that the structure of the eye does have an impact on which colors they select.

Intro: add paragraph telling what you are testing and why. I would maybe mention that Stomoxy have large ommatidium and how this affects what you think will happen. Add in a specific hypothesis that you are testing/what results you expect to see.

M&M: I think your material and methods section was very strong and painted the picture of what occurred very clearly.

Results: If you can add a few sentences stating results to have more than just one sentence per figure.

Discussion: Talk more about what these findings mean and mention any problems that may have occurred or may shape the results.

Conclusion: (I would consider combining the discussion and conclusion together and adding an abstract instead of a conclusion, but this is not necessary I don’t think its just another option) I would mention a little more of what was found in the conclusion though. Like mention the experiment and what was found without completely re-describing what happened but bring in important parts.

Possible weaknesses to mention or address: needing more species to see how things are different in other species. There could be other factors that influence what colors they prefer other than the eye structure.

**Specific Comments**

The calculated percentages in your discussion could be placed in the results section and then further talked about in the discussion saying that since they are the colors that reflect the least amount of light then they are the most likely to be landed on.

Could possibly add in some about how much light is reflected by each color. Like does brown reflect less than black and is that why it is the most common? Or is there not that much difference between those colors and only enough difference between like black/brown and white?

Possibly add in the assumptions that go with a chi-squared test, not sure if this is needed or not?