Download and complete the worksheet below; upload it to Canvas before leaving lab today.

1. **Background and Rationale (2 points total):** 
   1. In 5-10 sentences, find and summarize 2-3 sources from primary literature to inform your experimental design that explains your choice of using specific types of spices and foods to test for antibacterial activity. (1 point)

Here is an example of what we expect from each article summary: *A study was done by Potter and Snape (2016) to understand toy preferences by male cats in Great Britain. An experiment was conducted with 375 male cats ranging from 10 months to 19 years. The independent variables in this study are the 8 toys that the male cats were exposed to and the dependent variable is toy preference, as indicated by body contact with the preferred toy. The scientists conducted this study in a closed room devoid of windows, carpets, and furniture. Each cat was exposed to all 8 toys at the same time and the experiment was repeated 3 times for each cat, on three different days. This study relates to our research because…*

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* 1. Cite your primary literature sources in the space below. Although citation styles vary from field to field and journal to journal, for this lab, please cite everything in MLA format. (1 point)

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1. **Research Question: 0.5 point total**

Write one research question in the form of a statement. Make sure to include the model organism, independent variables, and dependent variable.

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1. **Null and Alternative Hypotheses: 0.5 point total; 0.25 for each hypothesis**

Make sure your hypotheses are aligned with your research question.

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1. **Experimental design (5 points total):**

Make sure your experimental design aligns with your Research Question and Hypothesis and focuses on sexual behavior in fiddler crabs. You may include pictures to help explain portions of experimental design. Include enough detail so that your professor can replicate your study independently

* 1. How will you collect your data to evaluate your (alternate) hypothesis? (1point)

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* 1. What is/are your independent variable/s? (0.5point)

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* 1. What is your dependent variable? (0.5 point)

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* 1. Do you have treatments or controls for your study? Why or Why not? (0.5point)

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* 1. How many replicates will you have in your study? (0.5point)

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* 1. What are some ways in which you are minimizing bias and confounding variables? (1point)

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* 1. Insert an image of your planned, **labeled** plate layout or layouts. Hand draw these, take a picture, and paste the picture into this document. (1point)

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1. **Data Analysis (2 points total):** 
   1. How do you plan to analyze your data? (0.5 point)

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* 1. What are some descriptive and/or inferential statistics that you can use? (0.5 point)

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* 1. Use the Step-by-Step Guide to help you decide on at least two different graphs (if appropriate) that you can make for your data. **At least one graph must NOT be a bar chart!** Add sketches of your graphs in the space below. Hand draw these, take a picture, and paste the picture into this document. (0.5 point for having two graphs with at least one that is not a bar chart; 0.5 point if the graphs have the correct IV and DV from your experiment)

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1. Electronic signatures of team members indicate equal contribution to the experimental design worksheet

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