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Worksheet 9: Vector Borne Disease + Tick wrapup

This worksheet mostly centers on the following paper:

Shapiro, L. L., Whitehead, S. A., & Thomas, M. B. (2017). Quantifying the effects of temperature on mosquito and parasite traits that determine the transmission potential of human malaria. *PLoS biology*, *15*(10), doi: <https://doi.org/10.1371/journal.pbio.2003489>

Read this paper before answering the questions below. Half of next week’s lab will be a paper-discussion about this paper, so make sure you read carefully and write down notes and questions you run into to be prepared for the discussion!

1. IN YOUR OWN WORDS define the following terms-if your answer shows up on google, you will not get credit for the answer. (1pts)
   1. Gonotrophic Cycle
   2. Extrinsic incubation period
   3. Akaike information criterion
   4. Thermal Performance Curve
   5. One other term you weren’t familiar or had to remind yourself of while reading this paper

1. Draw a diagram communicating this study’s experimental design. Be sure to include all the relevant information necessary to understand how they got their results (timeline of the incubation, what temperatures they’re incubating at, when mosquitos are fed). If you think it’s easier to break parts of the experiment up into separate diagrams, do that! (2pts)
2. Explain how to interpret figure 6 of the paper (the one with the blue, pink, and purple curves). What are the axes? What do the colors mean? What’s the main takeaway the authors are trying to communicate with this figure? (1pts)
3. In a few sentences, explain how understanding the findings of this paper could be important to public health and our ability to predict malaria incidence. (1pt)

1. In your opinion, is there any way that this type of approach falls short in predicting how temperature may affect this disease system? (1pt)
2. If you were to pitch a grant following up on this work, what research directions or questions would you focus on, and why? Explain in 4-5 sentences. (1pt)
3. Participating in tick sampling this week! (4pt)