

MWPARC Travel Grant Recipient: Bradley Johnson, Wabash College, Indiana

Mentor: Dr. Bradley Carlson, Wabash College

To begin I want to extend my sincere gratitude to the MWPARC Travel Grant, without their assistance my internship would have been much more difficult to be a part of. This grant was helpful for me since due to the COVID-19 Pandemic, on campus housing was limited and I had to travel between my home at the Wabash College on many occasions.

This summer I worked as a biology research intern along with three other interns. We worked under Dr. Carlson, an ecologist, whose recent work has focused on a population of eastern box turtles (*Terrapene carolina carolina*) in Allee Memorial Forest. We worked on many projects this summer, including analysis of turtle scute pattern using imageJ, prototyping a robot turtle to investigate turtle interactions, and a meta-analysis of eastern box turtle size and population density. But the main two projects we focused on were a population estimate at Allee Memorial Forest and assessing the immune function of the eastern box turtle, while simultaneously determining the validity of an immune assay technique.

I primarily focused on the immune assay, which was a bacterial killing assay (BKA). For this assay we plated an *E. coli* dilution that would give us approximately 200 colonies on an agar plate, for our control the bacteria was plated without any turtle plasma, but for the experimental group a concentration of turtle plasma was mixed with the *E. coli* dilution and then plated. These were then allowed to set for 12-16 hours in a 37C room. Then we counted the number of colonies that grew on the plates, and by comparing the control plates to the experimental plates we could see how many colonies were killed by the turtle plasma. This allowed us to compare the different immune activity of individual turtles. Currently, there is a debate in the literature whether the BKA can be done with frozen plasma or if it must be done with fresh samples (1-2 days in the refrigerated). We tested this by running the BKA with fresh and frozen samples using the same turtle.

This experience has taught me how difficult the scientific process can be. The most difficult part of the internship optimizing the assay, so that it would work properly. We ran into many roadblocks along the way but luckily with some help we were able to fix our mistakes and get usable results. Although I do not want to be scientific researcher, this internship has provoked thoughts about how research could be used in my career. My current career goal is to be a physical therapist, and I believe this experience will help me to think critically how optimizing treatments could improve patient recovery.



