Like many organisms, termites have complex microbial communities in their guts. Although some of these bacteria and protists may be able to survive alone, there is increasing evidence for symbioses among them. These symbioses involve the secretion of a molecule by one microbe, which another then uses for its own purposes. However, even though scientists know of the likely existence of these interactions, it is unknown what molecules are involved.

Our research has attempted to dive into this problem. We have isolated two symbiotic bacteria from termite guts, RFC-10 and RFCAL-19. Using short bursts of electricity, we inserted fragments of DNA randomly into the genome of RFC-10. In doing so, we were able to interrupt the function of some of the genes. We then plated individual the mutated bacteria with RFCAL-19. If it did not grow, we knew we had interrupted a gene in RFC-10 that was involved with supporting the growth of RFCAL-19. So far, we have successfully isolated multiple strands of mutated bacteria that have not supported its growth, and we are in the process of identifying the gene or genes that have been disrupted.

As someone who is interested in microbiology, and genetics in particular, this summer has been a fantastic opportunity for me. It has allowed me to practice multiple techniques and procedures that I wouldn’t have had the chance to do in labs to nearly the same depth. These experiences have affirmed my interest in these topics, and has confirmed that this is something that I would be comfortable and interested in doing in the future, both in grad school and beyond.