My first year as a Ph.D. student in Ecology and Evolution program at Rice University was mostly spent in the library, as I had to decide the future research projects. After finishing the core courses and read the recommended books I borrowed from the library, I found the coral reefs to be very fascinating as they exhibit gorgeous colors and shapes. The books about corals at the library introduced me to the world of corals, and made me realize how severe the threatens towards the corals are. The endosymbiotic algae that live in corals are extremely sensitive to elevated temperatures, yet we know little about adaptations in endosymbiosis to a changing environment, which is critical with expected global climate change. After I further dived into literatures discussing endosymbiosis, I decided to pursue the answer to one question: whether adaptation in endosymbionts can help hosts persist in stressed environment only.

To study how hosts and endosymbionts, may react and adapt to stress, I use green hydra *Hydra viridissima* and endosymbiotic green algae *Chlorella variabilis* as the model system. I choose this system based on several considerations: 1) Short generation time; 2) Easy to culture in the lab; 3) Hosts and endosymbionts can live without each other, so they can be manipulated independently; 4) Can be collected or purchased conveniently. Again books available in the library that focus on endosymbiosis and mutualism assisted me to determine which species I should use. While some books were not in the library collection during my research, they were purchased soon after I made requests. My study is greatly propelled by this easiness and promptness of acquiring necessary materials from the library.

After determining to use the hydra as my model system, I used the database and electronic journals provided by the library to search for hydra culture methods as well as past studies on host-endosymbiont stress responses. I managed to culture green hydra and the endosymbiotic algae in the lab successfully, and derived hydra without algae after I tried several procedures from the papers. Meanwhile, I found a feasible way to study how algae adaptation may assist host stress tolerance is by artificial selection on algae. My hypothesis is that the more tolerant the algae is to certain stress, the more tolerant the hydra would be to the stress when it forms endosymbiosis with that algae, and I can get tolerant algal strains by inducing mutations and selecting for robust ones. During this process, I learned a lot about artificial selection, fitness measurement, continuous culture, etc. from papers I downloaded. While Rice University didn't purchase all the journals I came across, I achieved the papers from Illiad for most of time.

The study room at the library also provides a good environment for writing up my dissertation. The tiny isolated area is a perfect place for me to indulge in literature searching and writing, freeing me from all the interruptions. I also gained assistance for academic writing from the resource at the library. I took several writing workshop in which I presented my dissertation draft, and got helpful feedback from both the instructor and other students. In addition to writing, I also learned how to use Zotero to insert citations and bibliography correctly. Finally, before I submitted my dissertation to the committee, I scheduled writing reviews with instructors from CWOVC. People with various backgrounds went through my dissertation, so I knew how people from similar fields and those from really different fields think about the logic and clarity in my draft.