

I have collected sperm from four different species; I barked at Fowler's toads, electro-ejaculated Eld's deer and Onagers, and sliced the vas deferens and seminiferous tubules of laboratory mice testicles. I am fascinated by my observations of the variations in sperm morphology and reproductive systems. The more I learn about reproductive biology and the cryptic nature of the events that occur after copulation, the more questions I generate. I am pursuing a graduate degree because I am eager to advance my studies in this field and to develop my own research on reproductive biology, sexual selection and evolution.

A course on Darwin's impacts on the modern study of evolution sparked my captivation with reproductive biology. It intrigued me that even at the advent of the theory of evolution, scientists recognized sexual selection as distinct and powerful. My curiosity was stimulated by current research in post-copulatory sexual selection and the new techniques and methods that will allow us to elucidate how events that occur after copulation are shaping evolution. These interests led me to the research of PROFESSORS on sperm competition, seminal proteins. I was inspired by their innovative research examining the genetics underlying differential female response to males. The influence of seminal proteins on the female is incredible, and the discovery of the genes in the female that are responsible for her response uncovers an entirely new field for investigation that I am eager to join. I am attracted to UNIVERSITY for graduate research because of its collaborative and integrative atmosphere. I value that in addition to entering the genetics, genomics and development department I will also be able to engage with colleagues in the reproductive biology seminar group.

My undergraduate honors thesis based on research I conducted at the Memphis Zoo has prepared me for rigors of graduate research. I studied the physiological limitations of sperm production in toads. With the aim of optimizing artificial fertilization methods we tested the effect of frequency of hormone-induced spermiation on the quantity and quality of sperm. In addition to performing the sperm collection and evaluation, I also designed an experiment to test the effect of handling stress on sperm characteristics, analyzed the data and prepared a manuscript on our research. This experience taught me the importance of considering both the details as well as the larger implications of a study while designing experiments.

Following graduation I undertook post baccalaureate research to explore the female reproductive system, engage with different types of research, and be exposed to new techniques and methods. As a summer fellow at the San Diego Zoo Institute for Conservation Research I participated in molecular research on the role of estrogen receptor sensitivity to endocrine disrupting chemicals in rhinoceros infertility. We used fibroblast cell lines from individual rhinos as a novel method for

evaluating differences in estrogen receptor activation in response to phytoestrogens. We were delighted to find that this model system could reveal differences among individuals and between species that previously went undetected. I continued to work in conservation-focused reproductive research at the Smithsonian Conservation Biology Institute. I was involved with two projects, first producing estrogen and progesterone profiles of Maned Wolves during breeding season to determine the hormonal response to induced ovulation techniques and second, testing the efficacy of different follicle culture methods on oocyte growth and survival. These zoo-based research institutions provided incredible accesses to a variety species and different types of research; in addition to my own projects I was able to assist with sperm collections and cryopreservation and breeding behavioral studies.

Currently, I am a research fellow at the National Institutes of Environmental Health Sciences. My research focuses on identifying mechanisms of mouse oocyte maturation and activation in a human health context. I have been using microinjection techniques to determine the role of G proteins in the resumption of meiosis. Participating in research around the United States, in different organizations and research labs, and with several study species have been memorable and compelling.

These experiences have prepared me with a large breadth of knowledge and experience that will aid me in developing experiments as a graduate student and beyond. As a PhD candidate in biology at UNIVERSITY, I hope to undertake novel research and advance our understanding of the events surrounding reproduction, the post-copulatory interaction between males and females, and the impact on evolution. I am eager to join the UNIVERSITY academic community and contribute my enthusiasm for research, community outreach and education. My current professional trajectory is to immerse myself in academia. My experiences with teaching have been wonderful; I found that the process of explaining material and interacting with students enhances my own research and scholastic endeavors. I would like to utilize my graduate degree as a professor, conduct and design my own research as well as mentor and educate future generations of scientists.