I almost wasn’t a biologist. For most of my life, I wanted to be a teacher. I wasn’t sure what *kind* of teacher, but it would probably be math and it would probably be K-12. So I went to college (and changed my major a few times) but came out of it prepared to be a math teacher in K-12. Then I got a job – teaching math to K-12 students – and realized it wasn’t what I wanted.

After that realization, I continued working at my undergrad part-time job and decided to take an introductory biology course. The course covered topics I had never thought about before - Fragile X syndrome and the Human Genome Project. (Which, if you are reading this, may seem everyday-normal but..) I was enthralled. I enrolled in the next class of the biology sequence and tried to figure out how to make this my career. Eventually I found an [unpaid] internship in animal rehab and emailed all of the professors in my department to see who would let me work in their lab. That might not have been the most effective strategy, but I wasn’t sure what sort of biology I was interested in and didn’t have much guidance. Either way, it worked out, and I got an [unpaid] research assistant position.

In 2015, I was admitted to the Master’s program at that same university, and began exploring my interest in ecology and evolution in earnest. I learned a lot during my Masters: I learned a lot of science, but I also started learned how to navigate The Academy. Neither of my parents finished college, I didn’t know how to navigate the university system during my undergrad, let alone this obstacle course we call graduate school.

I am applying to the City University of New York (CUNY) doctoral program in Ecology, Evolutionary Biology, and Behavior to reach my goal of becoming a research professor in the biological sciences at a top tier research university. This career path will allow me to pursue my passion of investigating meaningful evolutionary questions using computational tools, while being a mentor and teacher to the next generation of scientists and citizens.

I navigated an unconventional path through my early life and education, which has driven me and shaped my passions. At seventeen I was homeless; I wasn’t living on the streets or begging for meals, but I had to find a different place to stay every week, and rides to school every day. While my classmates were applying to college, I worked after school. Those challenges motivated me to work hard to avoid being in that position ever again. I graduated and opted to take Math education courses at my local community college: I had always enjoyed Math and knew that the difficulties I had experienced would make me an empathetic educator. But it was not until later, at the University of Central Florida (UCF), that I recognized my passion for not only teaching, but also for solving problems. As part of an undergraduate research program in Mathematics, I acknowledged that what I relished most was not theoretical mathematics per se, but applying the theory to solve real-world problems. I took several psychology courses, eventually earning my bachelor’s degree in psychology, but did not find my calling until taking an introductory biology course. Over the next semester, I joined a lab as a research assistant, started an internship, and began preparing for graduate education in biology. In 2015, I was admitted to the MS program at UCF, working with Dr. Christopher L. Parkinson – and simply found my passion for Evolutionary Biology.

My research experiences in Mathematics and Biology have shaped my interests and provided a solid foundation to become a successful Ph.D. student. As an undergraduate, I was accepted into the NSF Computational Science training for Undergraduates in the Mathematical Sciences (CSUMS) at UCF. This experience provided the groundwork for important research skills I have, including programming and science communication. For example, I worked on a project that implemented the shrinkage function, widely used in statistical estimations, to approximate the sparse and low rank components of a matrix in MATLAB. I also worked on my first scientific manuscript as part of this project, which has recently been published.

My research in biology taught me new genetic techniques and analyses, starting with a collaboration on a population genetics project of the eastern oyster, *Crassostrea virginica*. Mentored by a M.Sc. student in my lab, I explored whether morphological differences between two ecotypes of that species were tied to lineage-specific molecular changes. We used microsatellites to determine if eight populations, four of each ecotype, were differentiated at these neutral markers. For that project, I extracted and amplified DNA, binned microsatellites, calculated pairwise *F*ST values, and examined population structure. My collaborator and I wrote the resulting manuscript, which has been published in *Florida Scientist*.

As a M.Sc. student, I pursued my interests in genetics - which I use to understand the evolutionary history and population structure of organisms - with on-the-ground conservation. Under the guidance of Dr. Parkinson, I led a project that examined the population connectivity and genetic diversity of two subspecies of mole skink, *Plestiodon egregius*, whose threatened status was under review by the United States Fish and Wildlife Service (USFWS). Today, I have a manuscript in progress which is focused on the conservation genetics of this species and compares multiple data types: morphological characters, mitochondrial DNA, and genome-wide SNPs.

As I learned more about *P. egregius* and the complex landscape they evolved in, I became interested in understanding their historical dispersal using phylogeography. This is a main topic I want to pursue as a Ph.D. student. To advance on this interest, I helped Dr. Parkinson to apply for additional funding from USFWS and sample throughout the remainder of the species range. I developed a set of hypotheses regarding the historical dispersal of the species, and plan to perform model comparisons of demographic scenarios associated with each hypothesis using FastSimCoal2. During this project, I served as a mentor to two students from UCF’s EXCEL program, which supports recruitment and retention of under-represented groups in STEM disciplines.

For my PhD, I would like to build on my phylogeography background and develop a project that examines how organisms have responded to historical processes, specifically climate change, and how those responses lead to the patterns of diversity we see today. I am also interested in using that information to make predictions about how organisms will respond to future climate change. I would work with managers to communicate these predictions, so that my study is translated into practice. Methods that combine spatio-temporal ecological niche modelling with genomic data are powerful tools to examine these sorts of questions, and I would like to explore them at CUNY. My mathematical background, along with my experience in phylogeography, lends itself to a project examining how genomic and ecological changes affect the evolutionary trajectories of wild species.

CUNY, and specifically the City College of New York (CCNY) campus, would provide an ideal place to carry out this research. I was invited by Dr. Ana Carnaval to visit CCNY this December, and found a strong and supportive team of students and faculty with allied research interests. Specific to my research goals, Dr. Carnaval and her lab bring experience in addressing broad phylogeographic questions and a well-established research system in the Atlantic forest of Brazil. In the same department, Dr. Hickerson’s group has expertise in the development of methods for analyzing genomic data in non-model systems. Moreover, Dr. Anderson’s team have extensive experience in ecological niche model development. Although each of the labs use different methodologies, they are united by their fundamental interest in the biogeography of organisms. I believe that this common interest facilitates a higher caliber research and that I could bring a unique conservation focus.

I have also engaged in non-research activities that I look forward to build on at CUNY. Teaching, for instance, has always been a part of my career goals. Early in college, I took education courses. In graduate school, I enrolled in a course called Preparing Tomorrows Faculty, where I designed an evolutionary biology class. I put some of those lessons in practice when teaching an Evolution Lab at UCF. I also have been involved in outreach and service through UCF’s Biology Graduate Student Association (BGSA), where I planned a service event at Forever Florida, invited and organized a seminar speaker visit, and served on a travel award committee. My favorite part of being involved in BGSA has been the yearly biology summer camp for high school students in the Orlando area. For two summers, I have taught the Genetics and Evolution Day of the camp, using gummy bears as models for dihybrid crosses, pipe cleaner to make phylogenies, and having students design their own sexual selection experiment with brine shrimp. I am eager to continue these outreach activities at CUNY through groups such as the CCNY’s Women in Science.

Completing a Ph.D. will allow me to reach my goals of becoming an independent researcher and educating the next generation. My early life experiences have driven me to be self-motivated and work hard, while my education has equipped me with technical tools and affirmed my passion for Evolutionary Biology. If admitted to CUNY, I would strive to produce only the highest quality work and give back to the CUNY community. Thank you for your time and consideration of my application to the Ecology, Evolutionary Biology, and Behavior Ph.D. program.