Chris Talbot – Personal Statement, Cornell Computational Biology PhD

My first lesson in rapid environmental change came at age four, when my younger sibling was born. Having only recently achieved stable housing, the financial burden of a second child proved too much; my family of four was evicted from our apartment and began migrating from couch to couch. My parents scrambled to ensure my sibling and I had food to eat. Over time, I adapted to housing and food insecurity, continuous theft by my father as he pawned our belongings to pay for his next high, and transfers from one school district to another as we evaded him. Luckily, amidst the chaos, I found refuges that nurtured my growth and offered stability, allowing me to persist through tough times.

My first refuge was John Ball Zoo, which emphasized the beauty and value of the natural world. Each exhibit highlights conservation and thoughtful consumption habits like recycling and composting. The zoo ignited and fueled my fascination and care for nature, instilling in me a commitment to environmental stewardship.

My second refuge was an old hand-me-down laptop from my grandparents. Technology offered a virtual safe haven. The predictable nature of programming provided stability in an otherwise unpredictable world. From age 11, I found joy in crafting my own Minecraft mods, phone applications, and websites. This early immersion laid the foundation for my computational skills and fostered a love for problem-solving.

My third refuge was the band room. Band often serves as a home for kids from low-income families and queer or neurodivergent identities who may otherwise feel excluded in school. Band provided a sense of community, teaching me the importance of hard work and collaboration towards a common goal. While performing with world-class competitive percussion ensembles during and after high school, I also began teaching with a commitment to foster inclusive environments. My commitment to education led me to eventually achieve roles as the Director of Percussion at two state-finalist competitive band programs. As Director, I encouraged growth mindsets, emphasizing the importance of inclusion, self-care, and self-confidence. Leading teams of students and educators further honed my skills in project management and reinforced my commitment to creating spaces where everyone knows they belong.

While my childhood was marred by repeated disturbances, I adapted by seeking safe refuge in stable environments. My childhood experiences were, unbeknownst to me, evolving me into a specialist in change, of adaptation. It's fitting, then, that I would find my calling in studying *biological adaptation to rapid change*.

Unfortunately, my refuges failed to keep me grounded and motivated in high school after my father took his life. My grades plummeted, and I dropped out of high school with a 1.7 GPA. Afterwards, I worked grueling warehouse jobs, where I realized I wanted to do something more fulfilling. I decided to earn my GED and enroll in community college. As a first-generation student, I navigated college without familial support, learning how to select a major, enroll in courses, and balance school and work. Despite having to work three part-time jobs while enrolled, my persistence paid off as I excelled academically and rediscovered my passion for learning.

Transferring to the University of Michigan, I aimed to pursue computer science and mathematics, which had been my focus in community college. However, I soon became disenchanted with dedicating

my life to building technology for massive corporations – I wanted to align my career with my values, leveraging my skills to contribute to conservation efforts. Switching majors to Ecology and Evolutionary Biology (EEB), I found renewed academic motivation. Courses in EEB refueled my fascination with the natural world, and joining Dr. Roberto Márquez's lab introduced me to the excitement of research. Through hands-on experience with CRISPR techniques in non-model organisms, I discovered a passion for scientific inquiry, aligning with both my care for nature and interest in problem solving.

Mentors like Dr. Márquez and later Dr. Marjorie Weber were instrumental in this journey. They provided critical guidance and filled gaps in my understanding of academia. With my mentors' support, I explored various facets of biology—fieldwork, lab work, and computational analysis. I developed broad, interdisciplinary skills and interests. Working with Dr. Gideon Bradburd, I narrowed the focus of my research interests to population genetics–specifically, what spatial and temporal patterns of genetic variation can tell us about how species adapt to changing environments, and how this information can be applied to conservation. This field perfectly marries my computational skills with real-world applications, allowing me to satisfy my intellectual curiosity while keeping a broader purpose in mind.

Throughout my adult life, I've sought ways to generate communities of belonging through volunteer and work experiences. I've tutored adult learners in math and language arts at community college, led field trips for a range of age groups at Matthaei Botanical Gardens, and mentored community college transfer students at Michigan. Everyone deserves a safe refuge, regardless of background, age, or identity. Involving diverse individuals enriches our communities and fosters an environment where everyone feels valued.

Looking ahead, I will engage in public engagement activities unique to Cornell. Through GRASSHOPR, I will create accessible lessons for high school students highlighting the importance of conservation and the role of genetics in understanding environmental change. Collaborating with the Museum of the Earth, I plan to develop interactive exhibits that facilitate critical thinking about rapid adaptation and human impacts on the environment. With Dr. Daniel Anstett, I plan to modernize the Cornell herbarium website, transforming it into a hub for public engagement with biology. These efforts, detailed in my GRFP research proposal, reflect my commitment to science communication and outreach.

While my academic journey has had its ups and downs, these experiences have strengthened my resilience and determination. They taught me the importance of aligning my work with my passions, ultimately leading me to a path where I can contribute meaningfully to both science and society. I look forward to continuing to foster vibrant, inclusive environments at Cornell and beyond as I study rapid environmental change, something close to my heart.