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**Undergraduate Research Certificate Reflective Essay**

**From being scared to success: The diverse paths of my research experiences**

As a science student, when I finally learned about undergraduate research opportunities in my third year, I felt nervous and unsure. Questions like "Where do I begin?" "Am I good enough?" and "What if I mess up?" held me back. Still, something within me pushed me to seek answers; it was as if I had a mission to complete.

Towards the end of my third year, I discovered an unexpected interest in my BIOL 3000 Biometrics class, which is all about the applications of statistics in biology. While many students find coding in R daunting, I was drawn to it because it was very much like a puzzle. This fresh and new unlocked concept of biology motivated me even more. I approached Dr. Emily Studd to ask if there was a possibility to get involved in research. With her assistance and a few office hours, I created a study for the Taku River Tlingit First Nation that looked into how the size of wildlife management areas affected moose hunting pressure in British Columbia. Through this, I learned how to create a research proposal, analyze data in R, and use ArcGIS for the very first time to map out key findings. In my directed studies I spent countless hours creating graphs, interpreting data, and navigating government databases to compile meaningful insights that will be useful to the First Nations to protect moose populations.

One of the most rewarding aspects of this experience was being part of a research lab community. Weekly meetings with other students helped me develop confidence in presenting my work and receiving feedback. By the end of the project, I had compiled a final report to assist the First Nation community in moose conservation efforts. I also presented my findings at the Undergraduate Poster Exhibition of Research (SUPER), something I never imagined doing as a first-year student. At first, I was

terrified, but as I spoke about my work, I realized how much I enjoyed sharing my findings and seeing others research that they worked so hard on in the semester. The experience showed me that research isn't just about data; it's about collaboration, communication, and making an impact.

As that project ended, I found myself craving more. This led me to BIOMAPETS, a research initiative at EAFIT University in Medellín, Colombia, focused on the gut microbiome of dogs. This was an entirely new research environment for me, involving both lab work and product development. Initially, imposter syndrome crept in. I questioned why I had been chosen, but with time, I realized I belonged. Working alongside Dr. Laura Sierra Zapata and an all-women research team, I saw firsthand how research can extend beyond academic papers to create real-world solutions. Our goal was to develop a home test kit for pet owners to monitor their pets' gut health, an idea that excited me because it combined scientific discovery with direct community impact.

During this experience, I gained valuable lab skills, from collecting and processing samples to performing DNA extractions and PCR analysis. One day, after spending hours on an experiment, our DNA yield was too low for sequencing. It was frustrating, but instead of giving up, we brainstormed improvements and tried again. That moment of finally getting it right made all the effort worth it. The project also introduced me to biotech conferences, where I presented our research to experienced scientists across the region (in another language!). Taking the lead in organizing meetings to introduce product design ideas challenged me in new ways because not only was I just a researcher, I was a team leader. These opportunities pushed me

beyond my comfort zone and made me realize that fear often disguises itself as self-doubt, but others can see your potential even when you can't.

Beyond the technical skills, this research experience changed how I see biology. I used to think of it mainly in terms of medicine, but I now realize how many layers there are to the field. From ecology to microbiology to biotechnology, the job opportunities with a biology degree are endless. While I still want to become a veterinarian, my perspective has shifted. I now want to take time after graduation to work as a lab technician, particularly in agricultural research focusing on viruses. The research field is so dynamic and evolving so fast that I want to experience it in a professional setting before continuing my studies.

Engaging in undergraduate research has been one of the most transformative parts of my academic journey. It has shown me that science isn't just about memorization and exams; it's all about curiosity, and most importantly, the root of it all is teamwork. Research has given me something that I will cherish forever: confidence. Confidence in myself that I can achieve everything I set my mind to, faith in my ability, acceptance of possibilities, and belief that people can always support you. Looking ahead, I am excited for the many paths my biology degree can take me, and I know that whatever I choose, my research experiences will always be at the core of my scientific journey.

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