A Detailed Anatomy of a Graduate School Application Essay

lays out the theme of the essay

The life of a scientist, or at least what I have come to know of it, frequently hinges on beautiful collisions: between theory and application, between the lab and the clinic, between the known and the unknown.

Background

succinct personal history focusing on motivation and attributes relevant to research

Early in my undergraduate life, I had love only for the theoretical. Financial constraints at our state university necessitated large-group (sometimes even whole-class) experiments, making individual development in research skills quite difficult. I therefore turned away from the lab, endearing myself to concepts that enchanted the mind: thermodynamic derivations, bioorganic mechanisms, and immunologic signaling. These topics only demanded of me curiosity and dedication, which I had in endless supply.

I found success in pursuing these academic predilections, eventually graduating *summa cum laude* and being selected as the class valedictorian. However, I came to realize by junior year that I had been rather hasty in eschewing the lab, where the real meat of scientific discovery occurs. I then decided to immerse myself fully in health research, hoping that the theories I enjoyed would become more meaningful and personally fulfilling.

Transition

narrates career transition into research

I first witnessed scientific theory and application collide during a summer internship at the National Institutes of Health (NIH), where I was exposed to translational research. Here, I took every opportunity to develop my skills and perspective, impacted deeply by our lab director's unforgettable mantra: "Doing first world research in a third-world country." Antibodies and nucleic acids, once mere concepts to me, transformed into physical realities with social relevance.

Experience

brief description of early work highlighting achievements despite challenges

My first project was to isolate chicken antibodies against *M. tuberculosis* for use in a novel diagnostic tool. I was delighted to conduct this experiment for my undergraduate thesis, but funding delays forced me to abandon the study with only five months left until graduation. This first exposure to the vicissitudes of research did not deter me; **I quickly conceptualized a new project with the available resources at hand. I designed novel primers against *E. histolytica* virulence genes and searched for relevant polymorphisms within.** For my efforts, I was rewarded with some interesting mutations and an undergraduate research grant from the NIH. This work was significant to the lab (as well as to my own timely graduation), helping them validate a biosurveillance assay they had designed for Philippine waters.

enumerates relevant expertise gained outside the academic setting

I did not quickly dive into medical school or graduate studies like my friends from university. After earning my Bachelor's degree and professional chemist's license, I chose to expand my perspective further in one of the premier hospitals in the Philippines. **For two years at Makati Medical Center, I have been continually learning the trade of biomedical science: flow cytometry, cell culture for therapy, cell sorting, fluorescence in situ hybridization, gene expression profiling, ELISA, and the inner workings of clinical trials.** My days here are filled with fascinating collisions between pioneering research and patient care, which only strengthen my passion and interest for translational research. Here, I can relish in the intricacies of biological theory, while also perennially considering its role in the big picture of human health.

Transition

segues into motivation for doing current research

My experiences with cancer patients in particular have led to conflicting emotions. For two years, I have seen good people from all walks of life succumb to "the emperor of all maladies" in spite of exhaustive medical efforts; on the other hand, our attempts to generate clinically-relevant dendritic cells (DCs) for them have been my most meaningful work by far. Witnessing magnetic cell sorting in action, coaxing monocytes to gradually mature into DCs, and noting occasional clinical improvements have been nothing short of amazing.

Experience

brief description of recent work including key outcomes and ongoing endeavors

Thus, I have involved myself most heavily in our cancer program: **I optimized a 2-D chemosensitivity assay for patient-derived tumor cultures, worked out the ideal seeding density for our DC cultures, and was the first in our lab to successfully cryopreserve DCs with appreciable viability.** I am currently interrogating circulating tumor RNA in cancer patients, in the hopes of utilizing synthetic peptide antigens to prime the DCs of those who cannot provide tumor specimens. So far, a published abstract and a poster presentation have materialized from our work; a clinical case report and two research papers are underway.

further showcases experience relevant to target program

Goals and Motivation

articulates desired specialization

The totality of these experiences has engendered in me a drive to **specialize in cancer immunology** where my favorite scientific theories collide beautifully with very real clinical experiences. I have since read at length about other innovative ways of engaging cancer— I am particularly enthusiastic about adoptive T-cell therapy, inspired by reports from Sloan Kettering on the clinical utility of chimeric antigen receptor T-cells for blood cancers. Other strategies against cancer that stimulate my imagination include RNA screens, scFv screens, T-cell engagers, epigenetic control, and new tumor modeling/culture methods. **Beyond my immediate goal of earning a PhD, my true ambitions are to conduct groundbreaking science, communicate my research to others through teaching, and ultimately see the fruits of my work reach the Filipino bedside.**

expresses interest and familiarity with desired field of study

shares long-term vision

The immune system has been my long-time research interest, as it demonstrates all the biological sophistication that drew me to health research in the first place. (Nature, after all, has been working on it for far longer than we have.) The compelling science of Gerstner Sloan Kettering's faculty— particularly their critical contributions to cancer immunotherapy and fundamental cancer immunobiology— has inspired my application to the institute. I feel very strongly that this kind of program, where coursework and clinical rotations blend coherently, will help me cultivate the creative, ingenious approach to cancer therapeutics that I dream will define my research career. I truly believe that I can make the most out of what Gerstner Sloan Kettering has to offer: **my strong academic background demonstrates a critical approach to scientific theory, while its collision with my diverse laboratory experiences has sparked a fiery passion for applying my knowledge to combat disease.**

explains how target institute will benefit self

summarizes why candidate is an excellent fit for the program

My late father had always wished for me to become a medical doctor. While I realize that this undertaking will not lead me to a doctorate in the selfsame context, I am very confident that my pursuit of groundbreaking immunological strategies against cancer at the Gerstner Sloan Kettering Graduate School of Biomedical Sciences will have made him even prouder.