Md PhD Essay

As the cries of newborn babies filled the NICU, I turned to [Name of doctor], my mentor with more than three decades in neonatal practice and perinatal brain research. Desperate for knowledge on how doctors and scientists approach diseases differently, she replied: "A physician views them from a top-down perspective, while a scientist approaches it from a bottom-up point." Her words offered me much needed insight into this important subject. Her reply had a lasting impression on me, as it highlighted the importance of combining physicians' and scientists' interpretations of disease. As a physician-scientist, my aim is to bridge the gap between disease physiopathology and drug candidate molecular properties in order to understand how effective it is and what its action mechanism is during drug development.

As I deepened my research, I found myself increasingly drawn to the role of physician-scientist. The potential implications for patients became clear as I uncovered connections between proteins and their effect on bodily systems. During my time in Dr. [name of doctor]'s laboratory, I discovered that Intercellular Adhesion Molecule-5 (ICAM-5) could be used as a diagnostic tool to detect HIV-related neurological disorders since its presence in the blood indicated brain damage. Furthermore, through experimentation, I discerned that overexpression of the Sigma-1 Receptor Protein (S1R) stimulates cancer cells to multiply rapidly. By harnessing the power of a PKC inhibitor to stifle S1R signals to cells, we may be able to offer an effective treatment option for cancer patients.

I have been a research assistant in [name of doctor]’s lab, studying inter-alpha inhibitor protein (IAIP) as a potential treatment for neonatal hypoxia ischemia encephalopathy (HIE). During my time there, I had the chance to visit an NICU and witness firsthand the struggle experienced by premature babies and their families. It was truly heartbreaking. As I worked in the laboratory, I hadn't yet grasped how HIE affected humans. However, after conversing with medical professionals and gaining insight into their beliefs on the matter, it became clear that a new method of treatment was needed to help shield against this condition since hypoxia only offered limited protection. Reflecting upon the experience, I was enlightened to the fact that a physician-scientist is situated in an advantageous spot to investigate novel therapeutic alternatives which could not be attained by being solely a researcher or doctor.

As I investigated IAIP's neuroprotective mechanism, by working in both the lab and hospital, I was able to consider both physicians' and scientists' perspectives. From a physician-centric view, it became apparent that HIE-associated brain injury is caused by inflammation resulting from energy deprivation. From a scientific perspective, IAIP is thought to protect the cell by suppressing pro-inflammatory cytokine production. To further understand how this works, I am conducting histological and cell culture studies that will explore how IAIP's molecular properties influences HIE's pathology. Through my research efforts, I hope to gain more insight into IAIP’s mechanism in tissue and cells.

I aspire to be a physician-scientist as it will allow me to combine my scientific knowledge with medical expertise. By doing so, I can contribute in bridging the gap between bench research and clinical applications that benefit patients directly. This way, I am able to bring out the best of medicine through modern technologies like drugs and devices.