

Statement of Purpose

After completing 10th grade, the choice to major in biology came naturally to me. I was always fascinated by the sophisticated functioning of a living system, the intricacies of biological cycles, their interaction with each other and the ways to manipulate and engineer it for practical application. So, clearly I knew a Bachelor's in Biotechnology was my calling. However, it was never a cakewalk when I had to choose my major for Master's degree. That is when I came across an interesting work at the University where I was an intern – Bioactive compounds to treat cancer. Something clicked and I knew I wanted to contribute to this.

During my undergraduate studies, I gained a solid foundation in Molecular biology, Biochemistry, Chemistry and Microbiology which equipped me with a deeper understanding of biological processes and biomolecules. Furthermore, topics like immunology, physiology and genetics improved my comprehension of how the human body functions. I was blessed with the opportunity to work on a review report regarding genetic modifications as means of increasing the voltage output of a microbial fuel cell. The rigorous laboratory sessions and group projects in our coursework gave me a glance of the vast iceberg that is Biochemistry.

Beyond the confines of the laboratory, I actively sought to broaden my horizons and deepen my understanding of biochemistry and molecular biology. I participated in seminars and workshops, where I had the opportunity to engage with experts in the field. During my internship with IIT, Kharagpur, I learned about the several techniques of molecular biology and biochemistry. This experience not only honed my hands-on skills but also instilled in me a profound appreciation in the power of analyzing data, fostering an acumen for problem solving and the caliber of interdisciplinary learning. Moreover, the post-graduation diploma in food quality and assurance equipped me with sensitive detection methods, biological processes involved in food spoilage, molecular mechanism of foodborne pathogen's virulent factors and the safety and quality of food supply chain. This not only sharpened my skills in ensuring safety and quality of food products- a critical aspect of public health but also helped me develop a keen interest in molecular underpinnings of diseases and how biochemical pathways contribute to pathological states and the potential for targeted molecular interventions to alleviate human sufferings. Later, I undertook a survey project to understand the effects of food additives (Monosodium Glutamate) on palatability and satiety levels. Additionally, this aided in improving my understanding on how improving the flavour, colour and texture could increase the palatability of food item as well as increase its shelf life.

Furthermore, upon completing my diploma I applied for a 3-month internship at Amul Dairy located at Gandhinagar, Gujarat in order to try and bridge the gap between academia and industry. Dairy industry was a whole new chapter for me and each day came with its own set of difficulties. But that pushed me out of my comfort zone and encouraged me to network more and improve upon my skill set. I met several industry experts and dairy engineers who assisted me in chemical/microbial/analytical quality control during batch preparation and final product, dairy wastewater treatment, surplus milk handling, drying/ powder processing techniques, aseptic packaging, ice-cream production, butter making and packaging and several subsidiary matters like the supplier- quality based incentive to the farmers, PCR based protocol to identify quality of buffalo ghee and the products that Amul export to other countries. The high-end laboratories, state-of-the art analytical instruments and highly trained

and qualified professionals helped me learn accurate, prompt and cost effective sample preparation, analysis, testing and interpretation.

As a result of my deep yearning to understand and upgrade my skill sets I opted for an examination and got selected to be part of an esteemed hands-on internship program called 'Skill Vigyan Program' conducted by the DBT (Department of Biotechnology, Government of India) certified by LSSSDC. This will be institutional to make me industry ready and also keep me updated to current analytical techniques as well as prepare me to come up with solutions to real time problems. Moreover, this was a lovely chance to collaborate with several teams of like-minded individuals as well as a learning opportunity to deal with different opinions and reach to a conclusion as a team. I plan on making the most of the tenure here left with me.

I am writing to express my keen interest in pursuing a Master's degree in Biochemistry and Molecular medicine at your esteemed Institution. Universität zu Köln is known to be one of the oldest and research-intensive Universities. Moreover, the Postgraduate program offered here aligns perfectly with my interests. The several opportunities of hands-on learning in the laboratory project modules, seminars and workshops, facilities like CMMC and its cross-faculty collaborations with CECAD, MPI for Metabolism Research and MPI for Biology of Aging and DZIF and an intensive curriculum for project proposal and Master thesis captivated my attention. This opens up a plethora of invaluable insights into the real-world applications and challenges, allowing me to integrate cutting-edge research across multiple disciplines in order to address complex medical needs. Additionally, the comprehensive curriculum integrates advanced biochemistry with contemporary research in molecular medicine allows me to bridge the gap between academic research and clinical applications. A glance at the course content, and my interest was piqued to explore modules like Introduction to protein crystallography, 3D Cryo-EM, Metabolic reprogramming in health and diseases and Medical Biochemistry. The University possesses an extensive database of published reports and articles inclusive of 8 different key profile areas. One such paper I thoroughly enjoyed reading was written under the guidance of Professor Henning Walczak, Ph.D and titled as 'The Potent pro-apoptotic combination therapy is highly effective in a broad range of cancers'. I aim to work under him in collaboration with like-minded team of scholars.

I am eager to put to use the state-of-the-art facilities and resources at your university, which will not only provide me with unparalleled opportunities to collaborate and develop significant work but also uphold the University's long standing excellence. Beyond academics, I am keen on participating in extracurricular activities and initiatives through involvement in student organizations, sport fests, volunteer work at healthcare settings or in scientific conferences and seminars.

Studying Molecular medicine is not just a career choice, it's a deeply personal commitment born from witnessing the impact of this complex disease. My grandmother's battle with pancreatic cancer was a first-hand testimony to the uniqueness in its characteristics as well as challenges in its diagnosis and treatment. I envision to understand and address this complexity via interdisciplinary approaches and be a part of the ongoing research to make the treatments more effective, specific and less painful. Upon completion of the Master's program I aspire to pursue a Ph.D and work towards finding bioactive compounds and it's therapeutic potential to advance drug effectiveness.

I understand that given the reputation of the Institute, the admission process is highly competitive. Nevertheless, I am confident that I would be perfectly capable of upholding the academic excellence of the University and be able to contribute positively towards the projects undertaken by the University as well as the diverse vibrant community. I extend my gratitude for the time and attention taken to evaluate my application. I eagerly look forward to the possibility of joining the esteemed student body at Universität zu Köln.

Sincerely,

Renita Correya.