Dear Admissions Committee,

I am writing to express my profound interest in pursuing the prestigious PhD project titled "Investigating intrinsic and extrinsic mechanisms driving plasticity in colorectal cancer metastasis" under the esteemed guidance of Dr. Mirjana Efremova at the Barts Cancer Institute. As a biomedical science professional with an unwavering passion for cancer research and a robust foundation in molecular techniques, I am captivated by the opportunity to unravel the intricate mechanisms underlying colorectal cancer metastasis and phenotypic plasticity – a critical area with immense clinical implications.

My fascination with this field is deeply rooted in my curiosity about the intricate interplay between cancer cells and their microenvironment, which drives tumor heterogeneity, therapy resistance, and ultimately, the formidable challenge of metastatic progression. This interest was profoundly shaped during my master's research project at Nottingham Trent University, where I investigated the pivotal roles of *ENOX1, CCDC122,* and *LACC1* genes in prostate cancer progression. Through this immersive experience, I honed my skills in experimental design, execution, data analysis using Minitab/Graphpad Prism, and interpretation, solidifying my understanding of the intricate regulatory pathways that govern malignant transformation.

Furthermore, my prior experience with molecular docking studies targeting the STEAP2 protein in prostate cancer has equipped me with proficiency in leveraging bioinformatics tools and computational methods. This expertise will prove invaluable in the proposed project's analysis of multi-omics data and reconstruction of evolutionary trajectories, enabling me to navigate the complexities of integrating diverse datasets effectively. I am particularly intrigued by the prospect of seamlessly integrating spatial transcriptomics data with patient-derived organoid models to dissect the extrinsic signals from the tumor microenvironment that drive phenotypic plasticity and metastatic potential – a cutting-edge approach that aligns seamlessly with my research interests.

Throughout my academic and research journey, I have cultivated extensive hands-on experience in various molecular and cellular techniques, including cell culture, nucleic acid extraction, PCR, gel electrophoresis, ELISA, and SDS-PAGE. This technical proficiency, coupled with my training in data analysis, scientific communication, and adherence to rigorous quality control protocols, positions me as a strong candidate to contribute meaningfully to this interdisciplinary project from its inception.

I am particularly drawn to the Barts Cancer Institute's vibrant research environment and the unique opportunity to collaborate with Dr. Efremova's team, situated at the forefront of colorectal cancer metastasis research. The institute's expertise in cancer genomics and computational biology, combined with the project's integration of patient samples, organoid models, and gene editing tools, resonates profoundly with my research interests and future career aspirations in translational cancer research.

Notably, my academic journey has been marked by several achievements that underscore my commitment to scientific excellence. My publication, "A molecular docking study of human STEAP2 for the discovery of new anti-prostate cancer chemotherapeutic candidates" (doi: 10.3389/fbinf.2022.869375), demonstrates my ability to conduct impactful research and contribute to the scientific discourse. Additionally, my successful obtainment of a £3000 international scholarship from Nottingham Trent University serves as a testament to my academic merit and potential for future success.

Pursuing this PhD project would not only allow me to contribute to the understanding of a critical clinical problem but also equip me with the interdisciplinary skills and knowledge necessary to explore future roles in academia or the biotech industry. By unraveling the intrinsic and extrinsic mechanisms driving colorectal cancer metastasis, this research endeavor holds the potential to inform novel therapeutic strategies and improve patient outcomes, a goal that resonates deeply with my passion for translational cancer research.

With my strong academic background, research experience, technical proficiency, analytical acumen, and unwavering commitment to scientific excellence, I am confident in my ability to make meaningful contributions to this project and the broader field of colorectal cancer metastasis research. I am eager to embark on this exciting journey and look forward to the opportunity to discuss my candidacy further and share my vision for advancing our understanding of this formidable disease.

Sincerely,

Timothy Ongaba