*Relevant research experience and training in research methods*

As a biomedical sciences professional with over four years of hands-on laboratory experience across clinical, industry, and academic research settings, I have developed a strong foundation in research methodologies and molecular techniques pertinent to the proposed PhD project.

During my master's degree at Nottingham Trent University, I conducted a research project investigating the roles of *ENOX1, CCDC122*, and *LACC1* genes in prostate cancer progression. This entailed designing and executing molecular studies, critically analysing data using tools like GraphPad Prism and Minitab, and interpreting findings to elucidate the involvement of these genes in cancer pathways. Through this project, I honed skills in experimental design, technique optimisation, data analysis, and scientific communication via presentations and a published preprint.

My bachelor's research at Makerere University involved a molecular docking study on the STEAP2 protein, utilising bioinformatics tools such as PyMol, cBioportal, Chimera, and AutoDock Vina to identify potential therapeutic candidates targeting this protein in prostate cancer. This experience provided training in computational methods, structure-function analysis, and rational drug design approaches.

Furthermore, during my internships and previous research roles, I gained extensive experience in various molecular and cellular techniques relevant to the proposed project. These include cell culture (BHK-21, Vero, A549 lines), cell viability assays, nucleic acid extraction, PCR, gel electrophoresis, ELISA, and SDS-PAGE. I am well-versed in reagent preparation, pipetting, protocol optimisation, and adhering to GMP and quality control guidelines.

My research experience has also involved data analysis using Excel, GraphPad Prism, and Minitab, as well as scientific communication through report writing, presentations, and literature research. Additionally, I have attended training workshops on bioinformatics tools like primer design, PDB, and 16s rRNA analysis, further expanding my research skillset.

With this well-rounded research training encompassing molecular techniques, computational methods, data analysis, and scientific communication, coupled with my passion for cancer research, I am well-equipped to undertake the proposed PhD project investigating the role of gut microbiota in regulating tumor cell metabolism and malignant progression.

*Draft response for the "Supporting Information" section describing reasons for choosing the research project, its importance, why I am a suitable candidate, and how it aligns with my future career goals:*

My decision to pursue this research project investigating the role of gut microbiota in regulating tumor cell metabolism and malignant progression stems from a profound fascination with the intricate interplay between the microbiome and cancer biology. As a biomedical science professional with a strong background in molecular techniques and cancer research, I am captivated by the prospect of unraveling the complex mechanisms through which gut microbial communities can influence the metabolic adaptations and malignant transformation of tumors.

The global burden of colorectal cancer, coupled with its rising incidence rates, underscores the urgent need for a deeper understanding of the factors that drive tumor progression from benign to malignant stages. This research project holds immense significance as it has the potential to shed light on the metabolic reprogramming that facilitates tumor survival and proliferation, a hallmark of cancer. By elucidating the impact of specific gut microbes and their metabolites on tumor cell metabolism at both benign and malignant phases, this study could pave the way for novel preventive and therapeutic strategies tailored to each stage of the disease.

The University of the West of England's interdisciplinary research environment and the supervisory team's expertise in cell biology, microbiology, and metabolomics make it an ideal institution to undertake this pioneering project. The opportunity to leverage cutting-edge techniques such as Seahorse metabolic analysis, molecular biology assays, and mass spectrometry-based metabolomics aligns seamlessly with my research interests and skillset.

With a comprehensive background encompassing cell culture, nucleic acid extraction, PCR, gel electrophoresis, ELISA, and bioinformatics tools, I possess the requisite technical proficiency to contribute meaningfully to this project. Moreover, my experience in data analysis, scientific communication, and adherence to GMP and quality control protocols will ensure the successful execution and dissemination of this research.

Pursuing this PhD project at the University of the West of England would not only allow me to delve deeper into the fascinating realm of microbiome-cancer interactions but also align with my long-term career aspirations. I am driven by a passion for translational research that can bridge fundamental scientific discoveries with tangible clinical applications. By unraveling the metabolic mechanisms through which gut microbes influence tumor progression, this project holds the potential to inform novel preventive strategies, early detection methods, and targeted therapies for colorectal cancer.

Ultimately, this research endeavor would position me at the forefront of an emerging field with far-reaching implications for improving patient outcomes and reducing the global burden of this devastating disease. It would equip me with the interdisciplinary expertise and cutting-edge skills to pursue a rewarding career in academia or the biotech industry, where I can continue to contribute to the development of innovative diagnostic and therapeutic solutions for cancer and other chronic diseases.