

Statement of Purpose for Genomic Science and Technology

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In this era of increasing search for genomic contribution to diseases to provide accurate disease diagnosis and treatment with precision, it is my desire to be part of the efforts to improve health care delivery through genomic science and its applications in diagnostic tools development particularly in Africa and the world at large. My interest in Genomic Science and Technology developed as an undergraduate when I was exposed to a special seminar program on Genomic Technology. This interest further blossomed as a result of my interactions with the Faculty as a graduate student. The most significant of my experience back then was my contact with David Burke – a visiting professor from the University of Michigan, Ann Arbor, U.S.A., who, having seen my technical proclivity, further exposed me to some “Do It Yourself” technology. That exposure, as well as my research efforts thereafter, has culminated in a desire to pursue a Ph.D. in Genomic Science and Technology also influenced my decision to come to the U.S.A.

In pursuit of my interest, I joined Dr. Ademola’s research group in 2017 and worked on genetics of malaria among under-five years children in Ibadan. During this period, I discovered that till today, of all the countries in the world, Nigeria has the highest burden of malaria – especially among children between the ages of 0 - 5. Therefore, studies that will provide more insight into our understanding of malaria pathophysiology will be of utmost importance in malaria endemic regions such as Nigeria. Genetic studies on malaria offer this hope. While in Dr. Ademola’s laboratory, as my Master’s thesis, I genotyped three Single Nucleotide Polymorphisms (SNP) of interleukin 10 (IL-10) gene and discovered that one of the polymorphisms of the gene was significantly associated with protection against malaria symptoms in individuals with the polymorphism. In addition, I observed evidence of recombination among the SNPs showing that malaria might be placing a selection pressure on this gene. The result of this finding is yet to be published being part of bigger project which is currently going on in the group. This research opportunity exposed me to several hands-on experiences which include: DNA extraction from different sources, DNA amplification using PCR machine, genotyping using PCR coupled Ligation Detection Reaction (LDR-PCR) and analysis using Horizontal Agarose Gel Electrophoresis Technique.

Furthermore, the Master's Degree Program in Public Health Biotechnology at the University of Ibadan broadened my knowledge with courses that include Molecular Genetics, Population Genetics, Bioinformatics and Medical Statistics. I have been using some of this knowledge in my current position as a Research Assistant to Dr. Akande, who is currently developing hepatitis B registry in his laboratory here at the University of Ibadan in Nigeria. Some of my research efforts also include designing and constructing low cost genomic analysis equipment which I carried out in collaboration with other scientists. In addition, I had earlier investigated the ameliorative effects of *Antiaris Africana* on ischemic reperfusion induced brain damage in Wister rats as my undergraduate project. I believe this background has adequately prepared me for high performance in a highly interdisciplinary Genomic Science and Technology Department at the University of Tennessee, Knoxville.

My research interest borders on development of low-cost point of care biosensor and genomic analysis equipment that can elucidate molecular architecture of disease-causing pathogens. The need for high precision but low-cost diagnostic tools in Nigeria and Africa is enormous. Many states-of-the-art diagnostic equipment that are currently available in developed nations are often unaffordable for many African hospitals and diagnostic centers in Nigeria. Providing standard and affordable diagnostic tools for Africa is my driving force for pursuing a career in Genomic Technology. Having extensively reviewed Genomic Science and Technology (GST) offered by your University, I believe a Ph.D. in Molecular Genetics and System Biology or Analytical Technology research track will help me to realize my goal.

Evidently, there is lack of cutting edge technologies to accomplish my research objective in Nigeria. This necessitates my desire to attend the University of Tennessee Knoxville, USA, where my ambition and research interest could be pursued unfettered. My choice of the University of Tennessee is because of its renowned and cross-disciplinary faculties and robust state of the art Genomic Science and Technology facilities. In addition, GST offered by your University also provide a strong training in Bioinformatics, which I considered essential to my success in Genomic Science. Of equal importance is the generous financial support made available to the doctoral students at the University of Tennessee Knoxville, which will help me to work without distractions while benefiting from world class mentoring.

Immediately after my PhD study I would apply for a faculty appointment in a university that offers Genomic Science and Technology. In about one year after, I will go for my post-doctorate studies to further enhance my research capability. I would plow back the knowledge and skills acquired in harnessing the untapped human potential and resources by offering professional and corporate training in genomic technology for Nigerian and African technicians who had no opportunity of being college educated. I believe a doctoral degree in Genomic Technology will position me to win grant to actualize this goal. My ultimate goal is to own a Genomic Technology company where my research findings as well as that of others could be translated into useful products. I am convinced beyond reasonable doubt that the University of Tennessee will offer me the ingredients that will make me one of emerging global leaders in Genomic Science and Technology research.