For the past six years, I have resided in the epicenter of science and technology (San Francisco, CA) in an area that has recently seen a significant increase in the young, professional, and millennial demographic. As a member of this demographic, I have observed that in casual settings, we share a bond through advanced education, prestigious job titles, and positive socio-economic trajectory. During more formal interactions, we identify with one another through scientific exploration, development of cutting-edge technologies, and the desire to make advancements in the public health domain. Our skills, passions, and accolades create a sense of accomplishment that allows us to navigate our daily lives content with our contributions to the advancement of public health. However, these identities also allow many to ignore the ongoing public health crisis and proverbial “elephant in the room” -- the lack of minority representation in our professional environment. Although negligible for others, these circumstances represent my harsh reality as an African American male who has consistently been the only African American member of a given team or group far too often.

Being an underrepresented minority in the professional landscape does not imply that my experiences generally yielded hardship or vulnerabilities. Rather, what I have experienced could be viewed as a certain level of privilege, especially when compared to other young men like me who have grown up (or are growing up) in many of the nation’s African American communities. I have access to quality health care and retirement benefits. I own personal transportation but frequently perform my work from my home office. I am thankful for these privileges, but I have introspectively grasped the true meaning of the Bible verse “to whom much is given, much is required” (Luke 12:48). To that end, I am deeply saddened by the disproportionate number of African American deaths attributed to the Coronavirus Pandemic and am in search of actionable change. Galvanized through the creation of Healthy People 2030 and the cultural competency of the Biden-Harris agenda, it is my career passion to use genetic epidemiology to combat structural racism and improve social determinants of health within African American communities. If welcomed to study at Johns Hopkins Bloomberg School of Public Health (BSPH), I will pursue interdisciplinary research training of analytical methods involved in population genetics. These methods will further my work to model complex phenotypes and identify biomarkers of epigenetic disease processes within African American communities leading to the creation of interventions to promote health and longevity.

I consider myself a strong prospective candidate for the Ph.D. program in genetic epidemiology. During my tenure as a Senior Research Associate at Calico Life Sciences, I led the development of large scale multi-tissue bulk and single cell RNAseq workflows for the Research and Development (R&D) *In Vivo* Physiology team. The development of these workflows required iterative processes of *in vivo* disease modeling and subsequent RNA isolation optimization. We were able to leverage next generation sequencing as a discovery tool for complex phenotypes including, neurodegeneration, muscle atrophy, and metabolic syndrome. My workflow is currently implemented to assist in achieving our Drug Development Q4 corporate goal which aims to identify biomarker(s) in human specimens and generate preclinical data that would support its use as a tractable clinical biomarker(s) for a new disease indication. The origin of this corporate goal is a result of immense innovation created during the post-genomic era that has guided the development of advanced technologies that increase our ability to explore disease processes at a single cell resolution. While single cell sequencing platforms steadily improve, the need for genetic epidemiologists who have the computational training to analyze large complex data sets will prove essential to uncover relevant epigenetics involved in disease development. My interests in filling the ensuing research gap, the program competencies covered in the Principles of Genetic Epidemiology track curriculum, and the ongoing research of BSPH faculty members, inspire my pursuit for pedagogy at BSPH. In a 2018 publication in *Annual Review of Genomics and Human Genetics*, Dr. Priya Duggal, Director of the Genetic Epidemiology track at BSPH, evaluated epigenetic changes within the host and maternal genome that may play a role in the risk of infant malnutrition (Duggal & Petri, 2018). Likewise, in a 2016 publication in *Current Behavioral Neuroscience Reports*, BSPH faculty member, Dr. Margaret Daniele Fallin, utilized similar computational techniques to understand the epigenome and neurocognitive decline. Building upon their methodology, it is my goal to provide evidence-based biomarkers to corroborate policy initiatives promoting health behaviors in African American communities with poor social determinants of health. To reach this goal, while in the BSPH genetic epidemiology program, I would like to adapt my training to include a dual Master of Health Science in biostatistics to aid in population genetic analysis. I am also interested in participating in the Maryland Genetics, Epidemiology, and Medicine Training Program to supplement my learning with experience in clinical research settings. These points above, as well as my interest in multidisciplinary training including epidemiology, genetics, medicine, and biostatistics, illustrates why I consider myself a good fit for the doctoral program in Genetic Epidemiology at BSPH.

While attending the BSPH Genetic Epidemiology program, I aspire to focus my research efforts on identifying social determinants that alter gene expression leading to disease within African American communities. Theoretically, I would perform admixture mapping to detect gene expression patterns within the community and identify functional gene sets that co-vary with social determinants of health. I hypothesize differential expression of functional gene sets associated with age-related diseases in communities with notable social inequality or poor social determinants. Leveraging these functional gene sets as biomarkers for disease susceptibility, exposure, and disease processes, I will subsequently perform functional gene set analysis within the African American members of the community. Finally, I will conduct a community needs-assessment to identify those social determinants within the community that may be targeted with strategic interventions and monitor the effects of these interventions on those diseased functional gene sets. This approach will provide me with corroborating quantitative evidence of the deleterious effects of poor social determinants at large. In greater depth, my research will encourage targeting social determinants of health and monitoring disease biomarkers as an improved strategy intending to reduce the incidence of morbidity and mortality among African Americans.

After receiving my Ph.D. in genetic epidemiology, I will use my dissertation work as evidence-based resources to suggest policy changes that target social determinants of health in African American communities. In application, I will perform a needs based assessment applying nominal group processes to determine where resources should be directed within the community. Guided by these results, I will subsequently design a health promotion program with the objective of linking improvements in social determinants of health with a reduction of disease within the community. Recalling my experiences while in San Francisco, my life's mission is to contribute to sustainable improvement in the health and longevity of African American communities and nurture increased representation of African Americans in professional environments. I aim to address the unique health needs of African American’s to increase opportunities for us to pursue higher learning and chase careers in Science, Technology, Engineering, and Mathematics (STEM). We deserve the chance to reach “[our] full health potential,” without facing obstacles from “social position or other socially determined circumstances.” This includes equitable access to healthcare professionals, healthy food, a safe living environment, and the ability to be well across all aspects of life, from work to home life to medical care (CDC, 2020). To empower African American communities, I will integrate the program competencies learned while pursuing my Master of Public Health in global health and behavioral science with the program competencies gained from my Doctor of Philosophy in genetic epidemiology and Master of Health in biostatistics. This may read as ambitious; however, in four years time and with strong mentorship, I believe I can, (1) gain the skill set needed to develop a novel analytic strategy to determine epigenetic causes of disease; (2) actualize my analytical strategy through the use of innovative statistical methods and iterative processes; (3) employ my analytical strategy and provide evidence based data of its validity; (4) apply my strategy within a limited capacity African American community to promote health and wellbeing among its members; and (5) further the BSPH mission - [ to pursue ] the improvement of health for all people through the discovery, dissemination, and translation of knowledge, and the education of a diverse global community of research scientists, public health professionals, and others in positions to advance the public’s health.