Dear Sir or Madam,

I am applying for the PhD position on "Bayesian inference and AI approaches to infer patterns of disease spread from the genomes of the malarial parasite".

In my current academic career, I have developed an increasing taste for extravagant scientific topics over time and I have not been able to completely quench my thirst for new challenges and insights. For this reason, I would like to round off this journey with a PhD. Especially in the last year of my Master's degree in Bioinformatics at Queen Mary University in London. I increasingly enjoyed exploring Data Science specific topics and developing the coding skills needed for it. In particular, I was able to develop relevant skills in the programming languages Python, R and Ruby. I would like to continue using these skills to analyse scientific data in a better and more targeted way. Especially in the specified research project, which is about the spread of the malaria parasite, successes can be derived for the whole of humanity in the fight against this disease. I am therefore very interested in advancing this work.

In my professional career I started very small and worked as a nurse in Germany. Later, I did development work on a world tour through South-East Asia, among other places, and treated many people with this disease. Today I can be in a position to set the course for future control methods and to understand the disease even better, so working on this topic would fulfil me in a very pleasant manner. In addition, the further development of AI-based methods for the future to create even better and promising models is an important aspect of combating other diseases. Moreover, my connection to health and pandemic issues would be extended by a distinctive point. I am very interested in demonstrating my programming skills in this research area and creating improved models. I am particularly excited by Professor Nichols' former work and his way of communicating knowledge as demonstrated in our statistics course BIO782P – Statistitics for Bioinformaticians, which has fascinated me beyond measure. Working with Bayesian Inference and the importance of this method in today's world where data sets are many times larger than they were a few years ago excites me and I want to help complete this work.

In my current academic career, I have been able to publish a paper on the regulation of cytokinin signal transduction in plants. More specifically I have compiled a gene database in which genes have been classified according to characteristics such as the time of regulation and known function. I then used Excel to implement statistically prioritized listing to identify the most important genes and to better understand their regulatory mechanisms. Based on ongoing research, a model will be developed in the future, which can represent expression patterns of the most important genes under the influence of cytokinin and which can be derived to genes with similar function, regulation or even position in the genome.

The most exciting part for me was to do the research and find specific genes, patterns and functions that may be in connection to each other and build a network. Considerably I was very touched by getting the chance on publishing my paper in Frontiers and Science (KROLL and BRENNER (2020): Cytokinin Signaling Downstream of the His-Asp Phosphorelay Network: Cytokinin- Regulated Genes and Their Functions. Front. Plant Sci. 11, 1788. DOI: 10.3389/fpls.2020.604489)

During this work one of my unsatisfying aspects was set by the challenge of coding and since I have not made any experience in this field by then my research was limited at some point. This is why I started my degree in Bioinformatics in London. Today, in comparison I have the ability to evaluate certain models via R or Python and conclude even more specific relations between data. This makes me really proud, and I hope to continue my journey with a PhD at Professor Nichols Lab at the Queen Mary University in London.

What excites me most about working as a PhD is the myriad of unexpected challenges and discovering new approaches to solving them. During my time in university, I faced so many problems that seemed to be unsolvable and in the end I got an exciting result and I love the vibrating feeling when you achieve something unthinkable.