<https://www.nsf.gov/awardsearch/showAward?AWD_ID=1723158&HistoricalAwards=false>

**Describe any areas of interest that you would like to develop.**

genetic data in hopes of analyses using QTL and GWAS which I have been looking in to.

spatial models in a Bayesian framework to hierarchical data with selenium concentrations as a response.

As I will have my M.S. degree and have already passed comprehensive exams at the Ph.D. level, I only need 9 more credits of course work and the rest will be research working toward my thesis. Having this summer internship would help me see theory applied to “real world” problems, and the problems that arise and could lead to possible dissertation topics. Often the most useful statistical methods arise from “real world” problems. Statistics is a developing field because new problems arise and new methods need to be developed or existing methods need to be extended. I am at the point in my education where it is time to delve in to research, and working under experienced statisticians through this internship will provide the opportunity to understand areas that need to be developed. My work done in these areas will in turn benefit others working in that area.

Last semester was my first glimpse at research, and I see the importance of working closely under professionals to fully understand and define research problems. While relevance and usefulness in decision making, with a combination of accuracy, simplicity, and optimization are general criteria for my research interests, Statistical fields of primary interest to develop include genetic data methods, biostatistics, spatial models, and Bayesian methodology. I have had some experiences in these areas and explain them in response to the next question. Secondary fields of interest include stochastic processes and computation.

Data are often modeled by stochastic processes, but I have not had a focused course in it. Working with stochastic processes during this internship would build my understanding. While most of my computing is done in R, with some experience in SAS, I would greatly benefit from learning more programming languages such as Python. As I have a strong math background, I would like to know more and gain experience in writing algorithms. While I learned methods for larger data sets in my Multivariate course, “big data” is very frequent and the ability to work in basic applications would be highly beneficial. Computation skills are an integral part of working in statistics, and while advancing computing knowledge and skills may be a secondary skill learned in the process through this internship, I believe it is an area that if developed enough will better research and methods in created in the long run. In response to the next question I explain theoretical areas as well as applications I have experience in. Having experience in “real world” applications under a professional statistician would be of great benefit.

Other areas listed are statistical fields of primary interest to develop. I have had some experiences in these areas and explain them in response to the next question. in which I have had some experience. My experiences are explained in the next question.

In general, when addressing statistical problems, I think about benefits of more complicated models, validity of assumptions, and sample size to uncertainty quantification and modeling.

**List any special skills, research topics/experience, or other areas of expertise that you have.**