

Proposal Title: Identification of Nutritional Deficiencies in African Children and the Impact on Immune Function

Overview:

The AAP priority that will be addressed in this research project is nutrition and health. The objectives of this proposal is to identify key nutritional deficiencies that deleteriously impact immune function in African children. Upon arrival in my laboratory, the researcher will work with me on a daily basis to learn basic immunology and how nutrition impacts immunity and infection. Upon completion of the immunology tutorial, the early stage researcher will then do extensive research to identify key nutrients that are deficient in young African children and whether identified nutrients are expected to impact immune function. Based on her research, we will select the nutrients of interest for the project. It is expected that this portion of the project will take up to three months. During this time, I envision that she and I will write a review article that summarizes research on the impact nutritional deficiencies on immunity in young African children.

The next phase of the project will entail the researcher learning techniques to measure nutrients and to isolate and identify immune cells in human plasma. We will obtain de-identified blood samples from adults and then from children. Importantly, these techniques will include extensive experience using high performance liquid chromatography and flow cytometry. These techniques will be invaluable for the researcher if she continues nutritional immunology research. In addition, the researcher will learn how to analyze her data and to determine its biological significance. Once these techniques have been mastered, we will then perform *in vitro* studies to determine if potential micronutrients can improve the immune response to influenza infection. I envision these studies will encompass the bulk of the time the researcher is in my laboratory. As the project evolves, I expect that we will have enough data to submit a manuscript for publication. I also envision that we could submit a foundation grant to propose additional studies in Africa, as a continued collaborative effort. These will be collaborative efforts and I will closely mentor her during these processes.

The third aspect of training will involve the researcher teaching lectures in my senior undergraduate capstone course in nutritional sciences entitled "Nutrition and the Treatment and Prevention of Disease", which is offered in spring. I would envision the researcher could apply the knowledge gained in the laboratory and prepare a lecture on how nutrition impacts immunity in African children. She could also lecture on her research experience in Africa. This would be invaluable for students in this class and will give the researcher insight as to how classes are taught in the United States.

Overall, I firmly believe this collaboration will mutually benefit the researcher and myself. The project assesses an impactful area of concern in nutrition and health in Africa. In addition, it affords the possibility of continued collaboration between our research entities. It will also provide me with invaluable insight into how nutritional deficiencies impact human health and disease in African children. More importantly, this opportunity will enable a female scholar to reduce gender bias in African research institutions