



CAROLINA  
POPULATION CENTER

## Summer 2024 Undergraduate Research Internship

### Project Name

Population-environment drivers of malaria vaccine efficacy in Africa

### Faculty Mentor

Dr. Michael Emch (Geography)

### Project Description

The RTS,S malaria vaccine is currently undergoing pilot implementation in Ghana, Malawi, and Gabon. It is administered in three doses, with a fourth booster dose 1.5 years after the third dose (at an age which does not line up with any other childhood vaccinations). Three-dose vaccine efficacy has been shown to be lower in high incidence areas due to the so-called rebound effect where efficacy is lower in vaccinated compared to unvaccinated children (Bell et al., 2022). This internship will involve building a population-environment ecological database (e.g., rainfall, temperature, household materials, population density) and to conduct analysis that to predict the decline in vaccine efficacy due to a rebound effect.

### Scope of Work for Internship

The intern will have the opportunity to contribute to a larger study on the efficacy of the RTS,S vaccine. Experience and skills will be gained in data analysis by applying epidemiological, biostatistics and spatial (GIS) techniques. The intern will be required to provide weekly updates on their project with the mentorship team. Immediate supervision will be provided by graduate students and/or postdocs, but the intern will have weekly meetings with the PI. The intern will be listed as co-author on any resulting presentations and/or publications.

### Expected Deliverables

Completed data analysis; abstract/poster; (potentially) peer reviewed manuscript.

### Preferred Skills

Biostatistics and GIS programming is required. Experience with and knowledge of SAS and/or R programming languages will be essential.