

STATEMENT OF INTEREST

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Mathematical biology is one of the fields in mathematics which has been growing rapidly for the past 10 years. It is also one of the most exciting applications of modern mathematics. Many biological issues are addressed by using Mathematical modeling. I would like to use my knowledge in that field to study the spread of infectious diseases in Africa. Currently, I am working on malaria disease with seasonal variations in Mali. The big challenge that I am facing is how to control the spread of this deadly disease in Mali. To achieve that goal, we use the epidemic threshold R_0 for predicting the disease dynamics in constant and periodic environments. In constant environments, the disease persists on a stable endemic equilibrium when $R_0 > 1$ and goes extinct when $R_0 < 1$. In periodic environments, the disease persists on an endemic cycle when $R_0 > 1$ and goes extinct when $R_0 < 1$. We also use our analytical results to make connections with data from Mali.

The workshop on Mathematical Modeling of Infectious Diseases in Africa will be a great opportunity for me if my application is accepted. In fact, I will gain more experience in epidemiology by working with experts in that field. Therefore, when I get back to my institution, I will improve my work in considering maybe other relevant hypothesis that I had not mentioned before. I might also come back with new challenging problems on which I will work on in the future.