



**Title:** Exploring Mosquito Larval Immunity upon Exposure to Larvicidal Bacillus Sphaericus

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**Sponsor:** U.S. Department of Health and Human Services  
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**Summary:**

Malaria vector competence is largely determined by ecological interactions among mosquito gut microbiota, Plasmodium, and host immunity in the context of gut microenvironment. Mosquito immunity studies have been mainly focusing on the adults. Larva-pathogen interaction is an unignorable driving force in shaping mosquito immune system during the evolution. However, little is known about larva immune structure and its interaction with gut microbial flora. In this research we use larvicidal Bacillus sphaericus to study mosquito larval immune response, and characterize larval immune architecture by using microarray based global expression profiling. The impact of larval immune activation on the dynamics of gut microbiota in both larvae and adults are assessed by profiling gut bacterial community via high throughput pyrosequencing bacterial 16S rDNA marker. The influence of these parameters on the malaria susceptibility is also evaluated. The project generates data towards a better understanding of larval immunity and its impact on mosquito gut ecosystem.