ABSTRACT BOOK ABSTRACTS



A new ERA for global Dermatology 10 - 15 JUNE 2019 MILAN, ITALY

INFECTIOUS DISEASES (BACTERIAL, FUNGAL, VIRAL, PARASITIC, INFESTATIONS)

MOSQUITO SALIVA ALTERS PLASMODIUM BEHAVIOR IN THE SKIN THUS AFFECTING MALARIA TRANSMISSION

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Introduction: Malaria begins when the Anopheles mosquito deposits motile Plasmodium sporozoites into the dermis, as it salivates and probes the skin in search of a blood meal. From the dermal inoculation site, sporozoites must travel and invade blood vessels to reach the liver and establish systemic infection. Prior studies on how mosquito saliva affects malaria transmission have been contradictory and how saliva may affect sporozoite behavior in the skin are lacking.

Objective: We hypothesize that mosquito saliva influences vector-to-host malaria transmission by altering sporozoite motility at the cutaneous bite site.

Materials and Methods: We used a mouse malaria model in conjunction with intravital twophoton microscopy to characterize sporozoite motility in the skin. We alter the bite environment by adding Anopheles gambiae saliva to sporozoites or passively immunizing mice with mosquito saliva antiserum.

Results: Mosquito saliva significantly reduced sporozoite speed in the skin. Mice passively immunized with mosquito saliva antiserum showed significantly decreased liver disease burden and subsequent parasitemia upon mosquito bite challenge. Interestingly, sporozoites demonstrated significantly increased speed at the cutaneous bite site in mice passively immunized against mosquito saliva. Sporozoite confinement, also known as trajectory straightness, movement directionality, and the proportion of motile to non-motile sporozoites remained unchanged in all experimental settings.

Conclusions: We conclude that mosquito saliva decreases sporozoite speed at the cutaneous bite site. This effect is reversed with host immunization against mosquito saliva. Despite increasing sporozoite speed in mice immunized against mosquito saliva, liver disease burden and parasitemia were reduced. Slower sporozoites in the presence of mosquito saliva may more efficiently find and invade cutaneous blood vessels in order to











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establish host infection, but this remains to be elucidated. By studying the role of mosquito saliva, we may identify novel targets for vaccine development that disrupt vector-pathogenhost interactions during the cutaneous stage of malaria infection.



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