Do Mosquito bites help viral infections?

In the recent 21 June 2016 article of Cell Immunity, McKimmie and colleagues investigated the mechanistic process of the mosquito bite in arbovirus infections. The researchers used the Semliki Forest virus (SFV), a relative of the chikungunya virus. The SFV was first injected into the skin of mouse models, however the virus quickly decimated in the lymphoid tissue. However, when the mice were bitten with A. aegypti mosquito, this lead to higher replication rates and rapid spread of the virus.

The mosquito bite was also linked to inflammation and edema at the sites of penetration where the virus was retained while skin injection showed little reaction. Most interestingly, mosquito bites had distinct effects on innate immune reactions. Arbovirus infections lead to a greater neutrophil influx resulting in recruitment of myeloid cells permissive to viral infection. These mechanistic results suggest that mosquito bite infection is critical for the replication of the virus. The authors conclude, “These findings not only define the mosquito bite site as a putative target for post-exposure prophylactic intervention, but also pave the way for the development of in vivo models that better recapitulate an important aspect of mosquito-borne virus infection”.

Pingen, M. et al, 2016. Host Inflammatory Response to Mosquito Bites Enhances the Severity of Arbovirus Infection. *Immunity*.