GTR
Nagoya University

Advanced Bioscience Seminar / アドバンス生命理学特論

Mechanical transmission of dengue by *Aedes* mosquitoes contributes to disease proliferation

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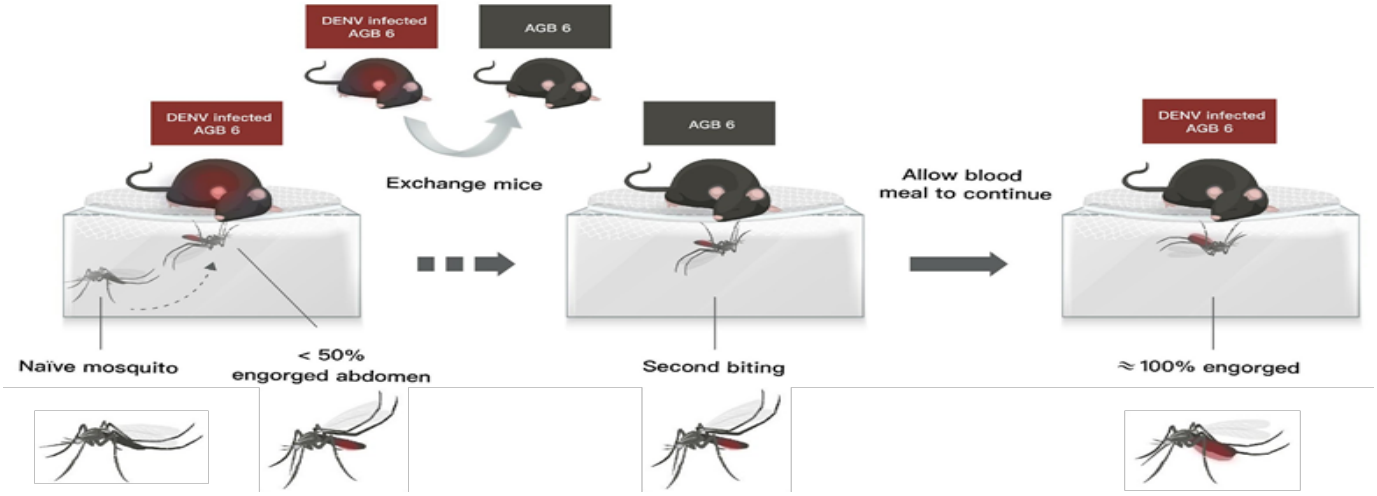
Registration (until June 1st)

https://docs.google.com/forms/d/e/1FAIpQLScWoQ4ytVdX188NxIlk2kn6K6fZIy9zJVUQKvW5u6Czah4IxQ/viewform?usp=sf_link

Outbreaks of dengue are increasing in number and expanding geographically, resulting in a serious threat to global public health. Dengue virus (DENV) transmission dynamics during the early stages of disease outbreaks have a significant effect on final outbreak size. Although the time between infected blood meal uptake and onset of mosquito infectivity is assumed to be a key parameter for determining outbreak risk, the potential for DENV transmission without viral replication in the mosquito has been largely ignored.

Here, we used a DENV2 mouse transmission model to show that immediately after biting infected mice, *Aedes aegypti* mosquitoes can mechanically transmit DENV to naïve mice without the virus undergoing replication within the mosquito. Mathematical models incorporating mechanical DENV transmission suggest it could significantly supplement known disease transmission routes and contribute to the growth rate and magnitude of outbreaks in densely populated regions. Our results have implications for vector control strategies that shorten the lifespan of *Aedes aegypti* mosquitoes, and raise the possibility of similar mechanical transmission routes in other disease-carrying mosquitoes.



June 6th 2022 14:00-15:30 / Online English

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