

Molecular basis of diapause in the Asian tiger mosquito *Aedes albopictus*



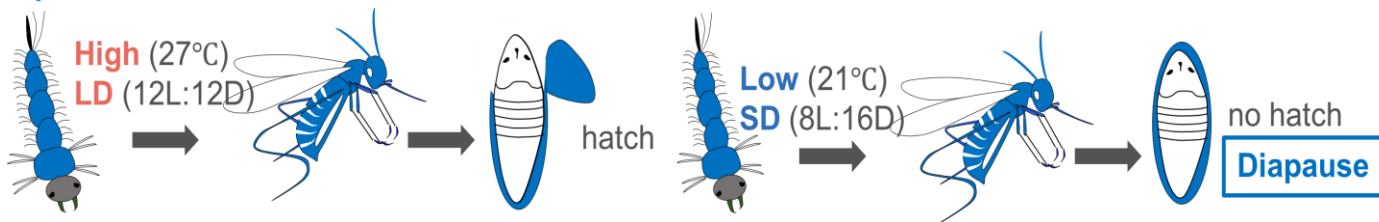
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Aedes albopictus [*Ae. albopictus*] mosquitoes are widely distributed from East Asia to India. *Ae. albopictus* undergo multiple life cycles throughout the year in tropical regions. Conversely, in temperate zones like Japan, when adult female *Ae. albopictus* are exposed to short daylight periods and low temperatures during late autumn they lay diapause eggs whose development is paused at the pharate first instar larvae stage. The arrest of hatching behavior persists until early summer, and pharate larvae demonstrate robust resistance to cold, desiccation, and starvation.

We compared tropical and temperate strains to elucidate the genetic mechanisms responsible for preparing and maintaining diapause in *Ae. albopictus*. We first confirmed that Kuala Lumpur (tropical) and Hiroshima (temperate) strains exhibited different hatching rates when adult females were reared under short daylight and low temperatures. We next performed a comparative analysis of temporal and comprehensive gene expression between eggs derived from tropical and temperate strains using RNA-seq to identify candidate genes implicated in diapause mechanisms. In addition to these candidate genes, we also analyzed genes such as *period* that regulate circadian rhythms and are currently engaged in functional analysis of these genes in mosquitoes using CRISPR/Cas9. I will discuss our recent findings and their implications for developing novel mosquito control measures.

Temperate strain



English

June 22nd 2023 16:00-17:30
ITbM 1st floor seminar room

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