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Impact of Dengue Virus Infection on Global Metabolic Alterations in the Aedes aegypti Mosquito Vector

Nunya Chotiwan; Irma Sanchez-Vargus; Jeffrey M. Grabowski; Amber Hopf-jannasch; Victoria Hedrick; Erik Gough; Ernesto Nakayasu; Devika Sirohi; Catherine A. Hill; Richard J. Kuhn; Rushika Perera

Abstract

Aedes aegypti mosquitoes are the primary vectors transmitting dengue virus (DENV), one of the most aggressive re-emerging pathogens worldwide causing more than 390 million infections per year. The spread of the virus is greatly dependent upon successful replication within both the human host and mosquito vector. Much effort has been placed in understanding the dynamics of virus transmission and replication in both organisms, but little is known about the global impact of DENV on metabolic pathways. Previous studies have demonstrated perturbations in human and Aedes albopictus cellular metabolic environments during DENV infection. Some of these perturbations include increasing the production of membranous lipids that had the capability to induce membrane curvature and permeability, as well as visibly altering both human and mosquito intracellular membrane architecture to support DENV replication. In this study, we have explored metabolic changes in Aedes aegypti midgut and salivary glands upon DENV (serotype 2) infection.

Keywords:

including differential expression of molecules that function as membrane building blocks bioactive messengers