



ID der Kurzfassung : 521

Intense *Wolbachia*-*Aedes aegypti* proteome crosstalk under adverse semi-field conditions in Rio de Janeiro, Brazil

Inhalt

Dengue and other *Aedes*-borne arboviruses are expanding in Latin America and globally, demanding novel vector-control strategies. *Wolbachia*-based replacement can reduce transmission, but field performance is context-dependent, shaped by the interplay between mosquito background, *Wolbachia* strain, arbovirus genotype, microbiota and local pressures. We used the ovary, responsible for *Wolbachia* maternal transmission and reproductive fitness, to evaluate how Rio de Janeiro summer semi-field conditions affect *Aedes aegypti*-wMel interactions. Ovaries from 3-5-day-old wMel-infected and uninfected females were analyzed by quantitative proteomics. Under these adverse conditions, *Wolbachia* infection remodeled ovarian translation, metabolism, mitochondrial maintenance, proteostasis, cytoskeletal organization and PIWI-mediated antiviral regulation, while *Wolbachia* proteins were enriched in translation, folding, DNA repair, oxidative stress response and cellular maintenance. These signatures indicate that local stress can alter molecular conditions supporting symbiont stability, maternal transmission and arbovirus blocking.

Framing *Wolbachia* as an ecological intervention rather than a fixed product that works equally in every setting, this study identifies candidate molecular readouts for future studies investigating how environmental stress may influence vector biology, symbiont performance and arbovirus-control outcomes.

Keywords

Wolbachia; *Aedes aegypti*; arbovirus control; semi-field conditions; environmental stress; quantitative proteomics; host-symbiont interactions

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Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

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