

MOSQUITO SYMBIONTS AS TOOL FOR CONTRASTING ZIKA INFECTION

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Among the 3,500 different mosquito species that have been described, several attract remarkable public health interest as medically important pathogen vectors. Mosquitoes are present all around the world, occurring in all regions of the world except for Antarctica and show a great ability for adaption in various environmental niches, thus playing relevant ecological roles.

It is very likely that components of the mosquito microbiota have contributed to the mosquito's capacity for adaption to different environments. Current advances in understanding the mosquito-microbiota relationships may have a great impact to better understand some traits of mosquito biology and aid in the development of innovative mosquito-borne disease-control strategies aimed to reduce mosquito vectorial capacity and/or inhibit pathogen transmission.

Indeed, the exploitation of bacterial symbionts represents a very hot topic in regards to the control of diseases transmitted by insect vectors. In fact, recently the Wolbachia infection of mosquito vectors of Dengue virus turned out be an innovative approach, particularly effective in combating this infection and more in general in conferring resistance to other insect viral infections (i.e. Drosophila C virus and Flock House virus).

Moreover symbionts may be also employed in paratransgenesis, an innovative approach that relies on genetically modified mosquito symbionts to express molecules within the vector able to interfere with parasite development and transmission.

Both these approaches may be usefully applied to contrast Zika infection within its vectors.

We will present the cumulative knowledge regarding the symbiotic relationships between mosquitoes and the acetic acid bacterium *Asaia*, with particular focus on Zika vectors and the perspective applications of symbiotic control in developing efficient management of mosquito-borne diseases.