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# Wolbachia Hertig 1936 (Rickettsiales: Alphaproteobacteria)

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## *Wolbachia* Hertig 1936 (Rickettsiales: Alphaproteobacteria)

*Wolbachia* Hertig 1936, is an obligate intracellular bacterium, that is, outside a cellular environment it is unable to survive. The great, possibly widespread, and adaptable nature of *Wolbachia* about arthropod species is that Arthropoda have a great variability of species and individuals [1-6].

They are in great prominence because some strains are considered a method of controlling agricultural diseases and pests, thus causing financial and economic impacts on *Wolbachia*, endosymbiont bacteria involved in biological control processes, dipterans, and ixodid ticks (the bacterium that also infects spiders, isopods, and a series of nematodes from the filarial group) [1-6].

*Wolbachia* is known for its ability to exploit the reproductive systems of its hosts, inducing changes in their mode of reproduction, such as the induction of cytoplasmic incompatibility, thelytoky, feminization, and death of males, thus favoring its dissemination in the host population. That manipulates host reproduction to ensure vertical transmission from mother to offspring [1-6].

*Wolbachia* has aroused the interest of the scientific community, mainly because of its vast abundance, its diverse effects on hosts, ranging from reproductive manipulation to mutualism, and its potential applications in the control of pests and vector-borne diseases [1-6].

The *Wolbachia* Method consists of releasing *Aedes aegypti* L. 1762 (Diptera: Culicidae) with *Wolbachia* so that they reproduce with local *A. aegypti*, gradually establishing a new population of these mosquitoes, all with*Wolbachia*. However, it is not found naturally in *A. aegypti*. When present in this mosquito, *Wolbachia* prevents the dengue, zika, chikungunya, and urban yellow fever viruses from developing within it, contributing to reducing these diseases [1-6].

Egg parasitoids of the genus *Trichogramma* Westwood, 1833, are widely used in applied biological control and are commonly associated with *Wolbachia*. *Trichogramma galloi* Zucchi, 1988 (Hymenoptera: Trichogrammatidae) stands out as the main egg parasitoid of *Diatraea saccharalis* (Fabr., 1794) (Lepidoptera: Crambidae), with numerous initiatives for its use in applied biological control programs for this pest (Figure1) [1-6].

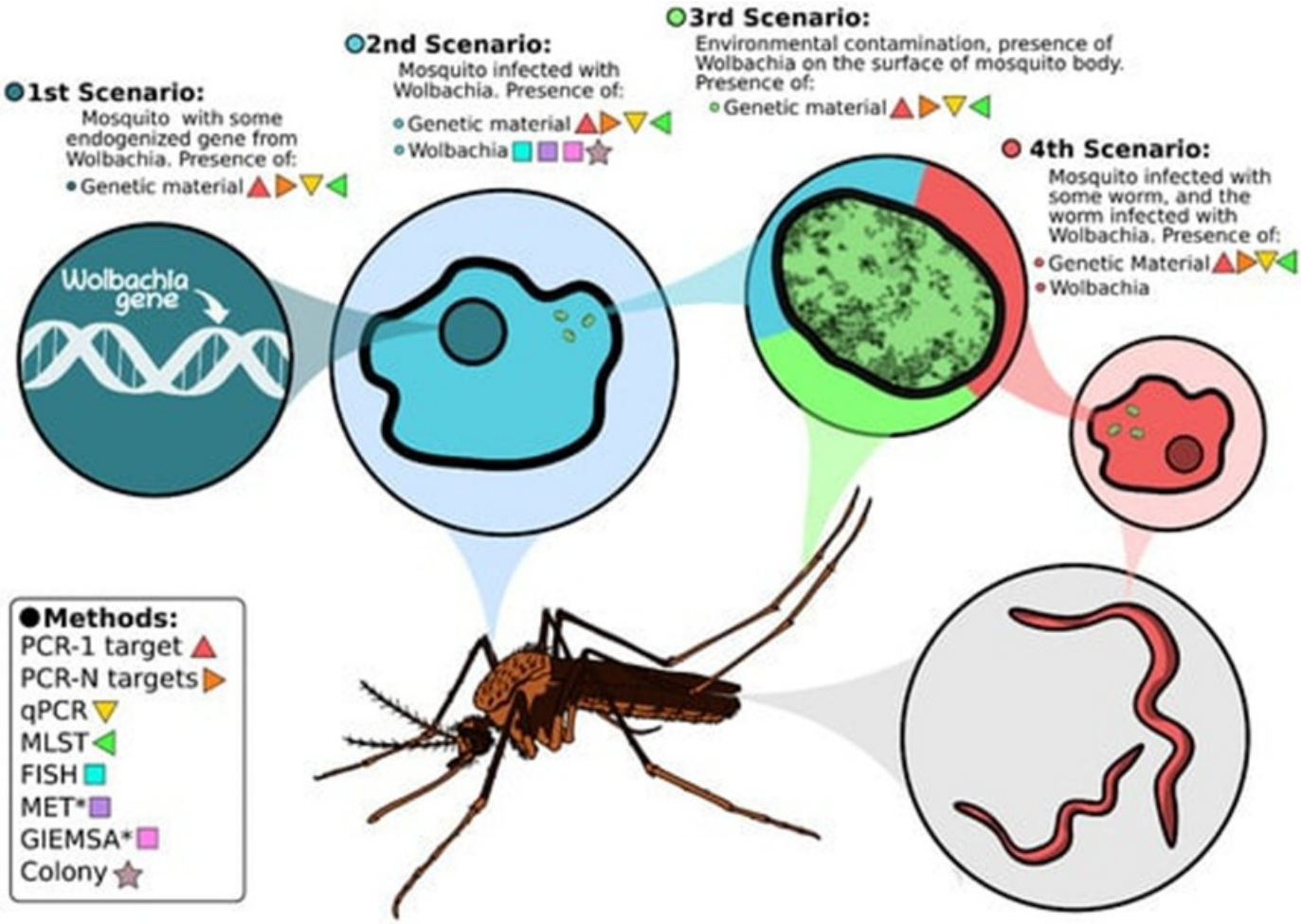


**Figure 1.** *Wolbachia* detection methods and possible results derived from true infection and/or *Wolbachia* contamination. Triangles and squares represent DNA-based and visualization methods, respectively. Each circle represents one specific scenario and which of the following methods could be used to detect *Wolbachia* molecules. Methods that can suggest the presence of a bacteria establishing a true infection but cannot confirm if this infection is caused by *Wolbachia*

Sources: https://doi.org/10.3390/pathogens10010039 and https://www.mdpi.com/2076-0817/10/1/39.

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