

Background

- *Wolbachia* is an endosymbiotic bacteria estimated to be in 40% to 60 % of insect species.

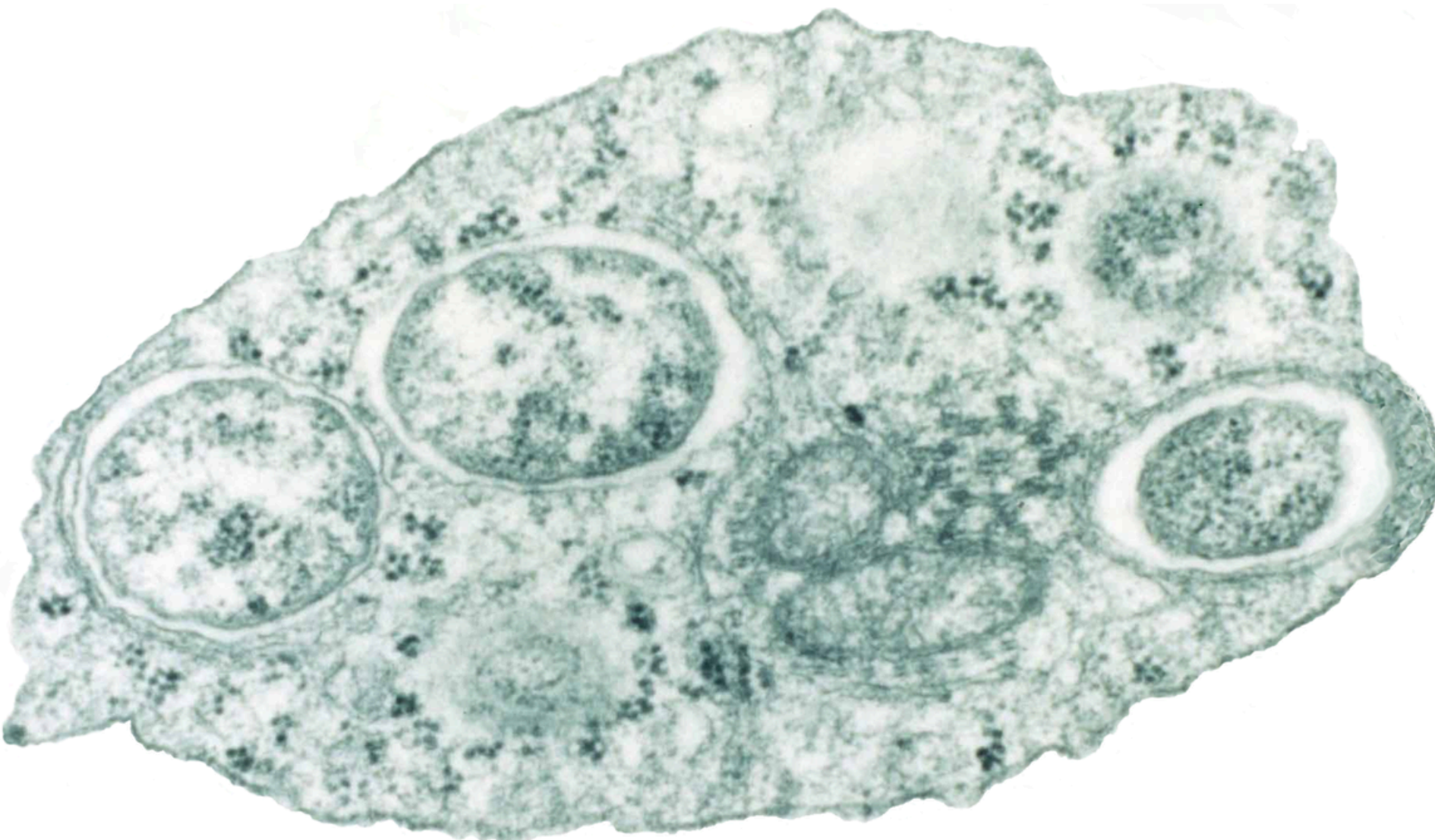


Figure 1: Photo of Wolbachia (Public Library of Science, 2004)

Research Questions

- Does *Wolbachia* spread through **vertical transmission** in *Culex*?
- Do *Culex* in Wooster, Ohio, have *Wolbachia*?

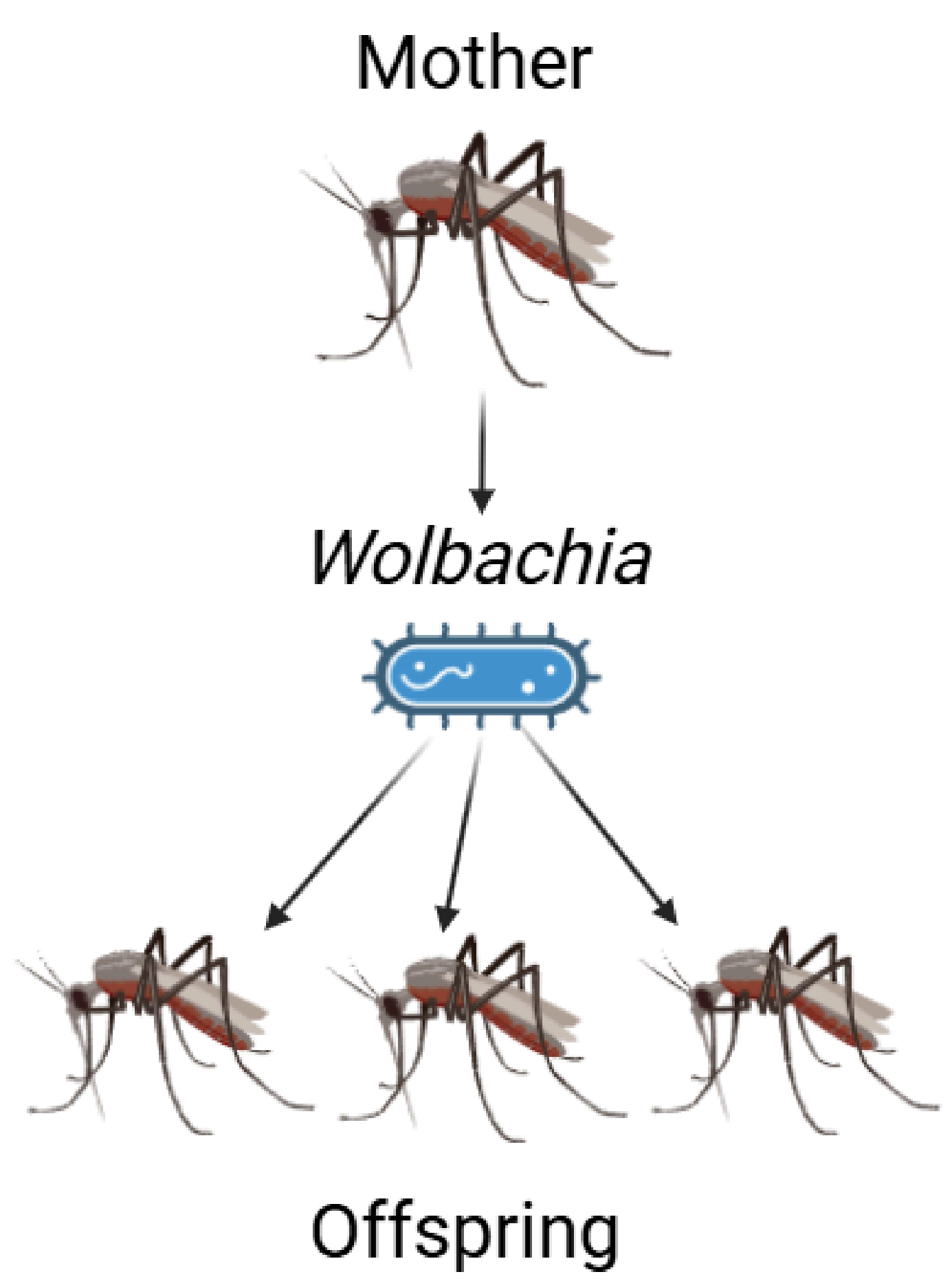
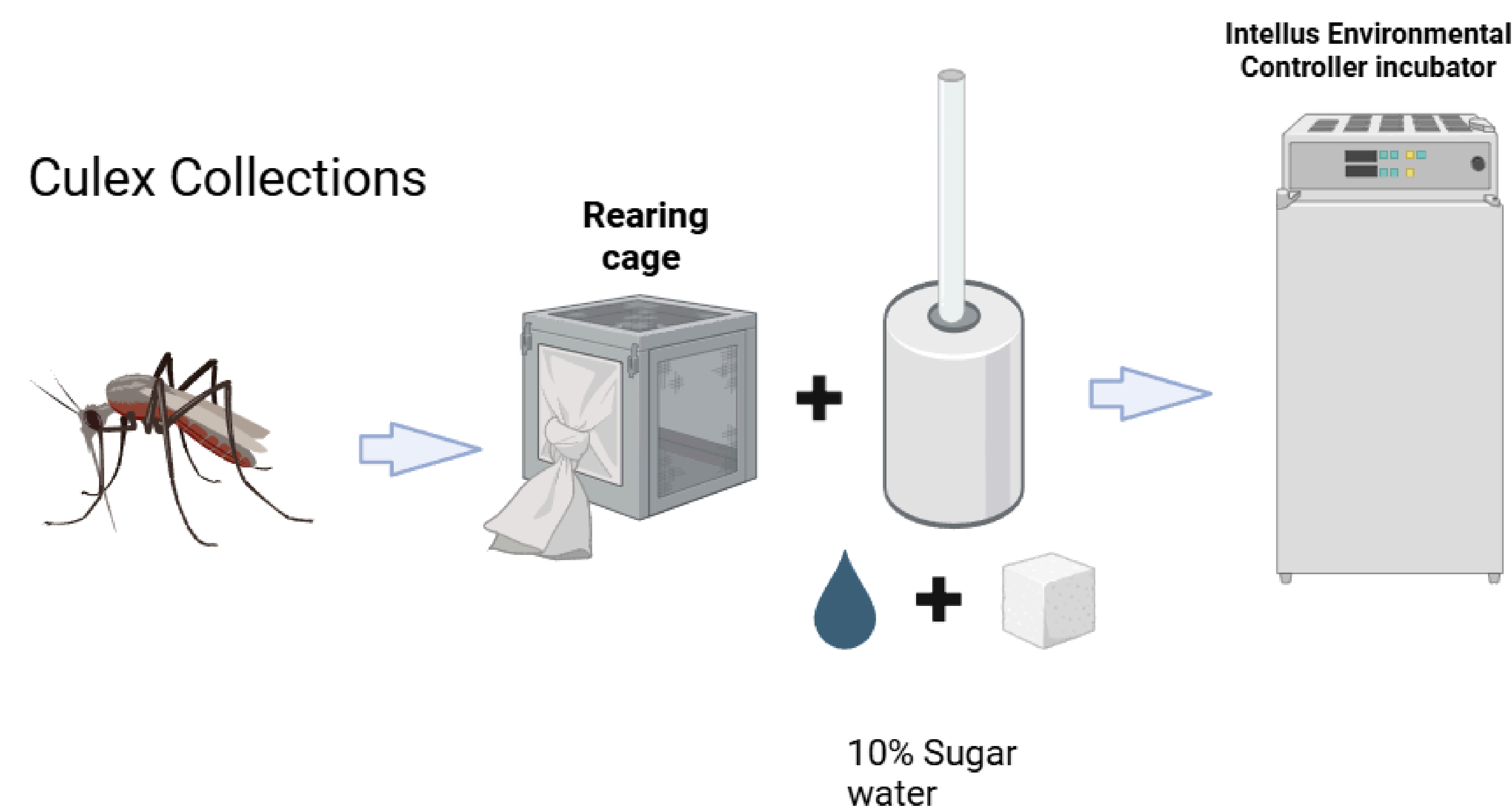
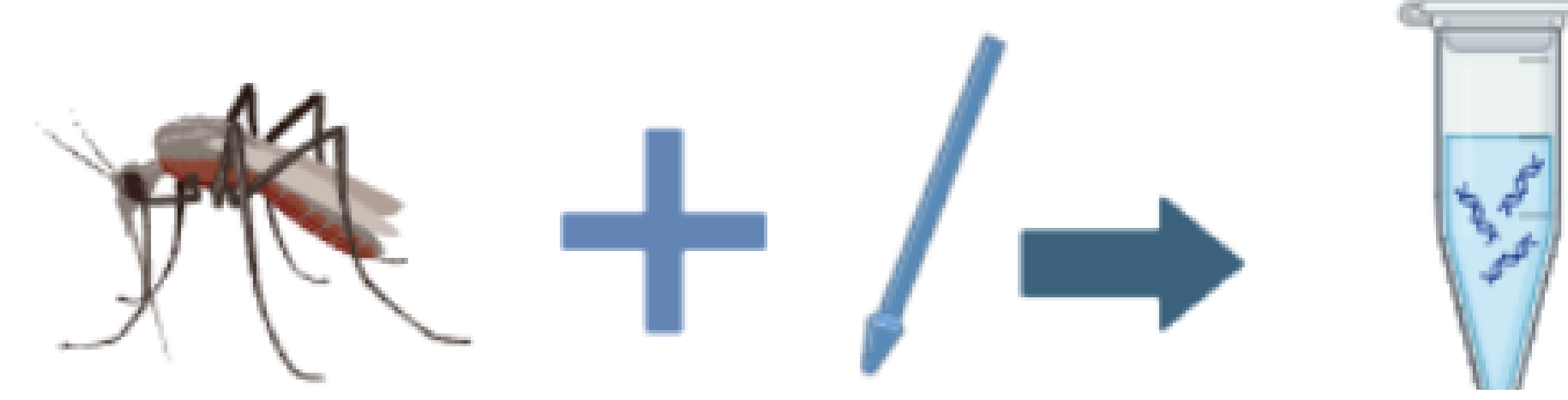


Figure 2: *Wolbachia* going from female *Culex* to her offspring by vertical Transssimon.

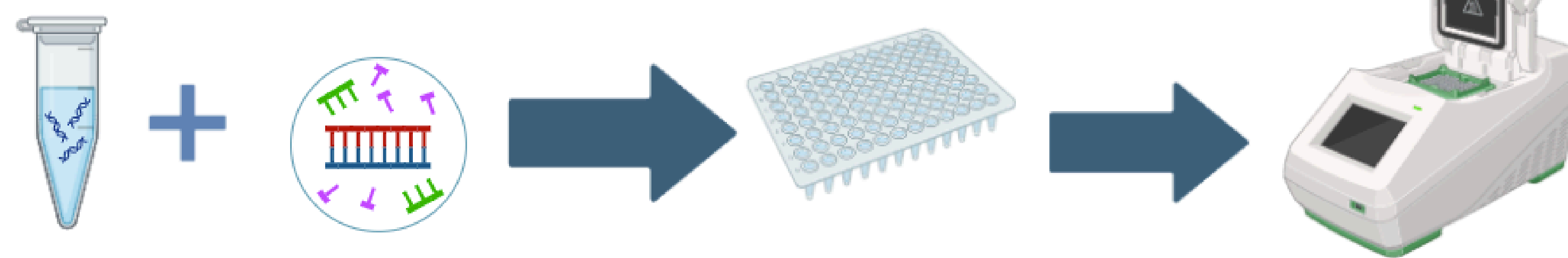
Methods



Dna isolation



qPCR



Acknowledgement

- Dr. Nanfack-Minkeu
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Reference

Lorenzo-Carballa, M. O., Y. Torres-Cambas, K. Heaton, G. D. D. Hurst, S. Charlart, T. N. Sherratt, H. Van Gossun, A. Cordero-Rivera, and C. D. Beatty. 2019. Widespread Wolbachia infection in an insular radiation of damselflies (Odonata, Coenagrionidae). *Scientific Reports* 9:11933.
Guruprasad, N. M., S. K. Jalali, and H. P. Puttaraju. 2014. Wolbachia-a foe for mosquitoes. *Asian Pacific Journal of Tropical Disease* 4:78-81.
Genome Sequence of the Intracellular Bacterium Wolbachia. 2004. *PLOS Biology* 2:e76.
Wang, X., X. Xiong, W. Cao, C. Zhang, J. H. Werren, and X. Wang. 2020. Phylogenomic Analysis of Wolbachia Strains Reveals Patterns of Genome Evolution and Recombination. *Genome Biology and Evolution* 12:2508-2520.

Results

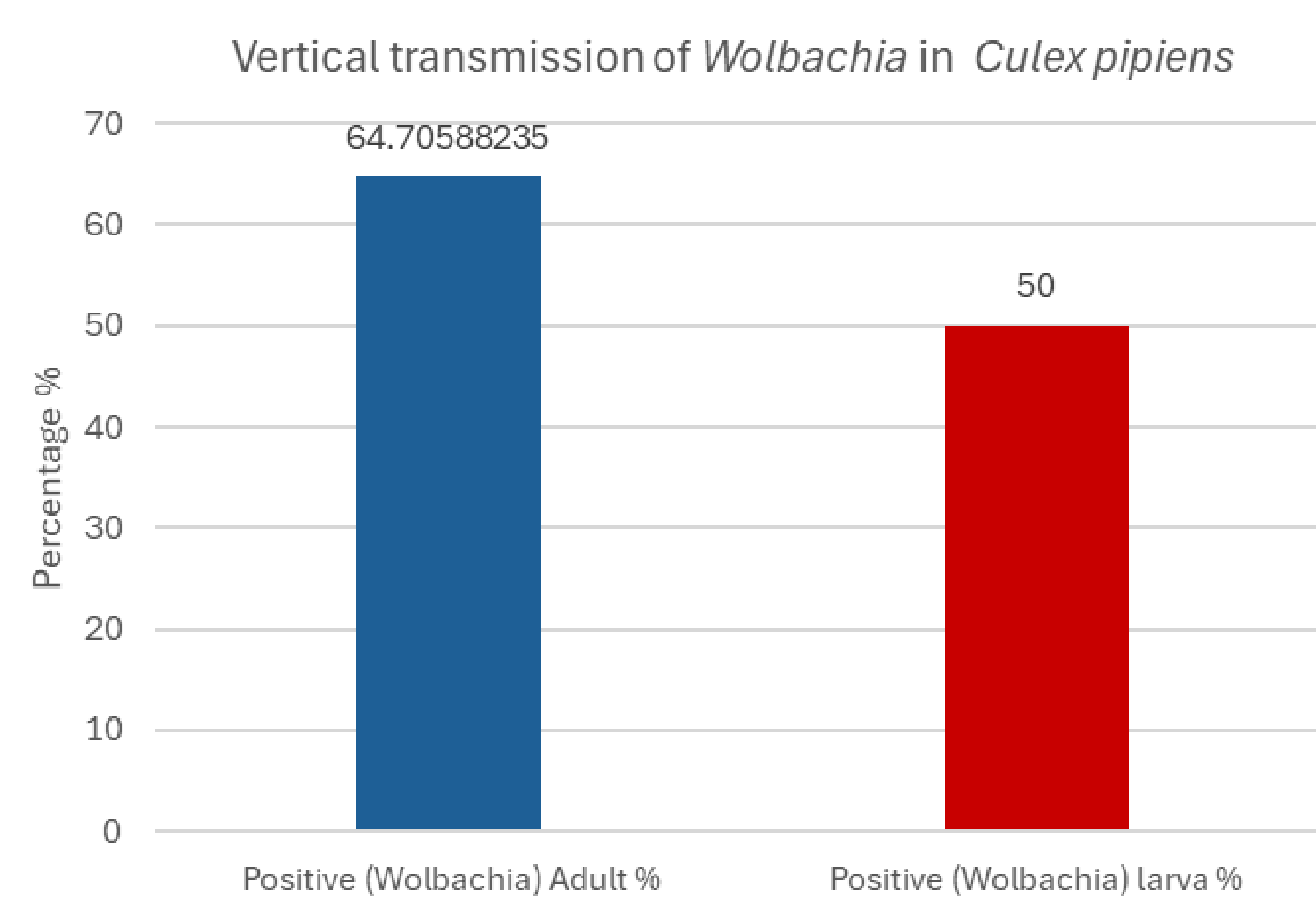


Figure 3: **Vertical transmission** of *Culex* mosquitoes, total samples: Adult (n=34), larvae (n=16)

Wolbachia density variation

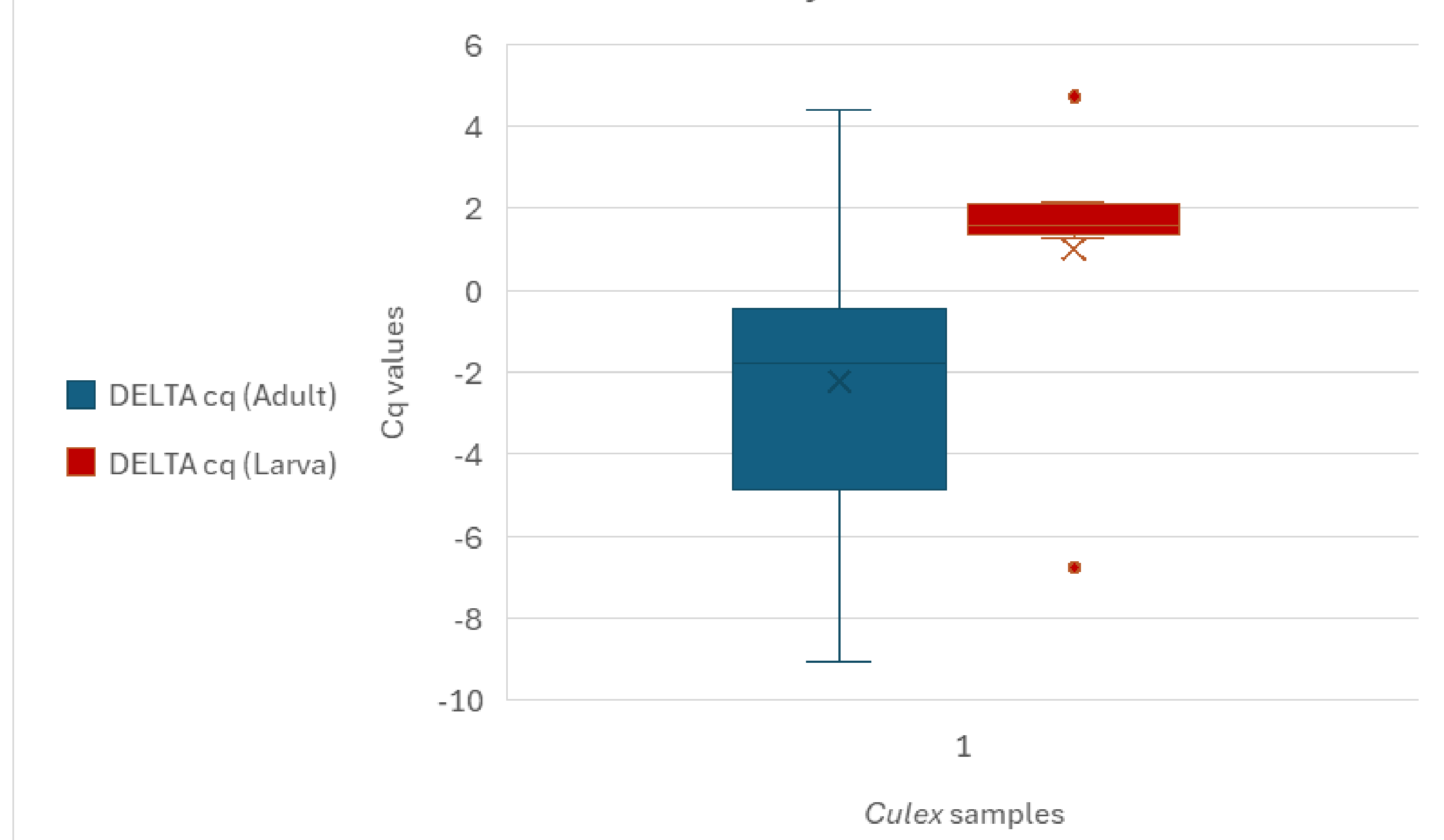


Figure 4: Variation of **Wolbachia loads** in adult and larval *Culex* samples. One-way ANOVA was performed to confirm a significant difference in both *Culex* groups. ($p = 0.0287$)

Future studies

- Future studies can look at the different strains of Wolbachia in *Culex* mosquitoes in Wooster, Ohio.

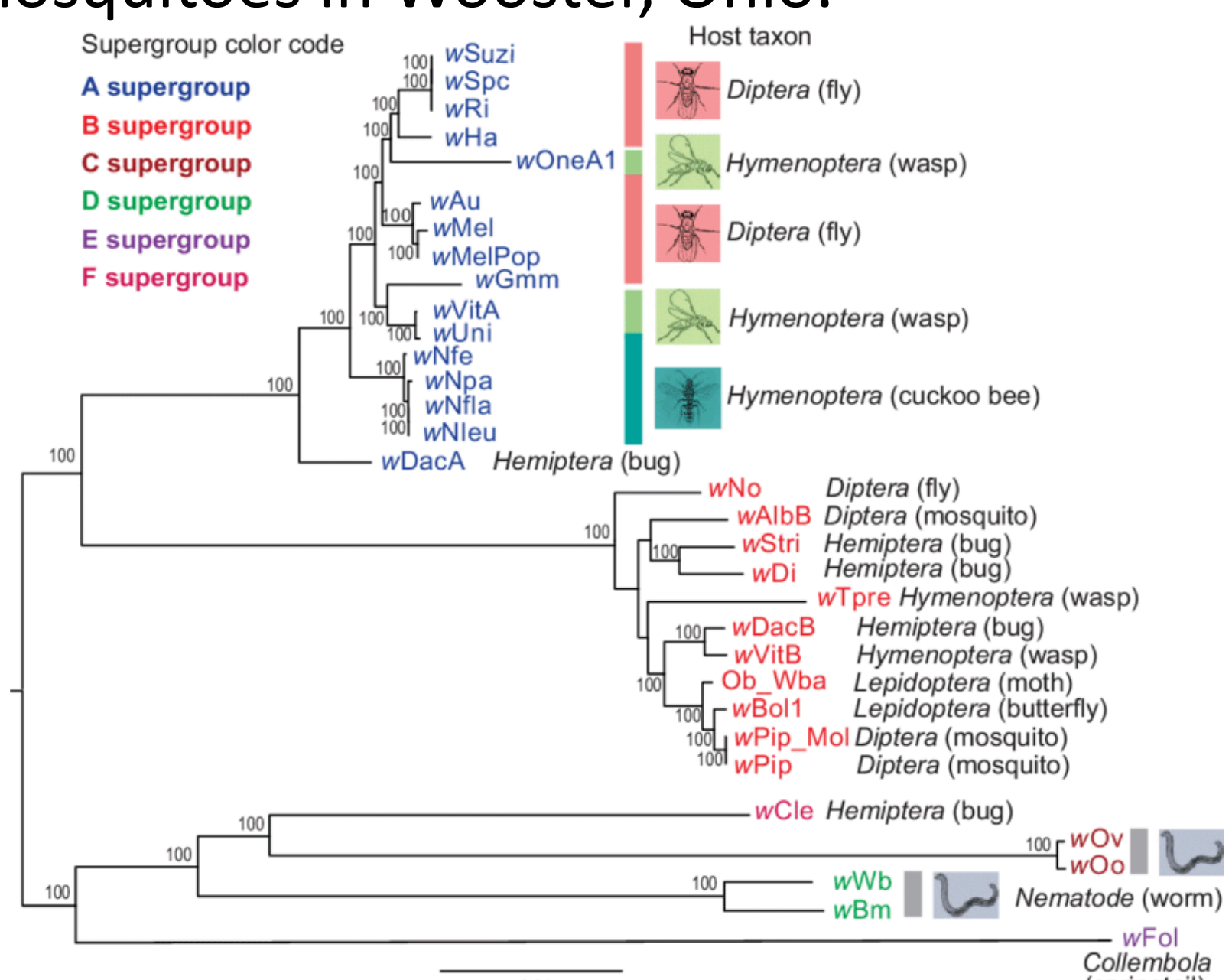


Figure 5: Phylogenetic tree of *Wobachia* strains (Genome Biology and Evolution 2020)