Review of: "The Assembly of the Y Chromosome Reveals Amplification of Genes Regulating Male Fertility in Bactrocera Dorsalis"

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Potential competing interests: No potential competing interests to declare.

This research article entitled “The Assembly of the Y Chromosome Reveals Amplification of Genes Regulating Male Fertility in *Bactrocera Dorsalis*” by Wu et al. is a good piece of scientific literature, having a significant contribution to the field of tephritid fly control. This is a breakthrough in assembling the Y chromosome of B. dorsalis that opens up valuable resources for understanding the genetics of this invasive pest. Identifying amplified genes like gyfY and confirming its role in male fertility offers new avenues for developing control strategies. The research suggests possibilities for both Y-chromosome targeting for genetic sexing and CRISPR/Cas9-based "Y-shredding" for generating sterile female offspring. The details of chromosome-level assembly and validation would help assess the accuracy of the Y chromosome sequence.

The study also identifies a few genes but lacks in-depth functional analysis. Understanding their specific roles in male fertility would strengthen the case for targeting them in control methods. The RNAi experiment suggests that gyfY depletion affects sperm production. However, potential off-target effects on other cellular processes should be explored for safe and effective control strategies. The feasibility of using CRISPR/Cas9 for Y-chromosome "shredding" in field populations needs further investigation. Factors like delivery mechanisms and potential off-target effects in non-target organisms need careful consideration. This research offers valuable insights into the Y chromosome of B. dorsalis and opens doors for developing novel control strategies against this destructive pest. Addressing the limitations mentioned above will further strengthen the findings and pave the way for practical applications. This review provides a critical analysis of the research. By addressing the points raised here and conducting further investigation, the researchers can strengthen their findings and move towards developing effective control strategies against the oriental fruit fly. Overall, the manuscript is presented in an intelligible fashion and written in Standard English but needs some language correction.