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Grande salle + visio.

WHO CONTROLS CYTOPLASMIC INCOMPATIBILITY? HOST GENETIC EFFECTS ON *WOLBACHIA*-INDUCED STERILITY IN *DROSOPHILA SUZUKII*

par

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- 📌 *Wolbachia*-induced cytoplasmic incompatibility (CI) is a widespread bacterial manipulation affecting host reproduction and a key mechanism exploited in pest control strategies. CI manifests as embryonic lethality in crosses between infected males and uninfected females, resulting in conditional sterility. Although *Wolbachia* genotype is often considered the primary determinant of CI strength, the relative contributions of host and symbiont factors remain poorly understood in systems with incomplete CI and it remains unclear how strongly host genetic background influences intraspecific variation in CI strength.
- 📌 We investigated the relative roles of *Wolbachia* genotype and host genetic background in shaping CI in the invasive agricultural pest *Drosophila suzukii* using genomic and phenotypic approaches. CI strength varied from 0% to 70% depending on the male host genetic background, whereas genetic diversity among *Wolbachia* genotypes was low. *Wolbachia* genotypes associated with both weak and strong CI phenotypes were genetically highly similar, and *Wolbachia* titer was not correlated with CI strength.
- 📌 Using two *D. suzukii* lines with extreme CI phenotypes (0% vs. 70% embryonic mortality), we performed reciprocal crosses and quantified embryonic mortality in crosses involving F₁ and F₂ hybrid males mated with uninfected females. Model selection based on AICc indicated that the genetic architecture of susceptibility to *Wolbachia*-induced sterility includes autosomal and dominance effects, or autosomal, dominance, and cytoplasmic/X-linked effects. Introgression of *Wolbachia* between host genetic backgrounds further confirmed that CI variation is primarily driven by host genetic factors.
- 📌 Together, these findings demonstrate that host genetic background is a major driver of intraspecific variation in *Wolbachia*-induced sterility in *D. suzukii*.