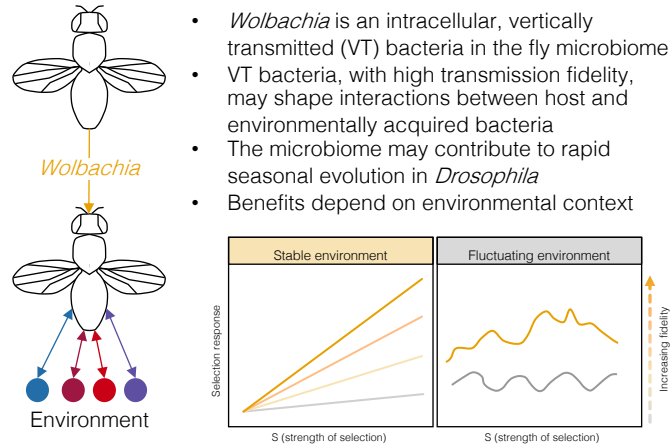


Wolbachia effects on *Drosophila* microbiome and metabolic phenotypes vary during seasonal adaptation

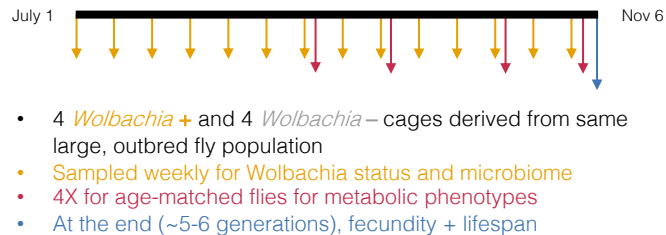
Lucas P. Henry & Julien F. Ayroles

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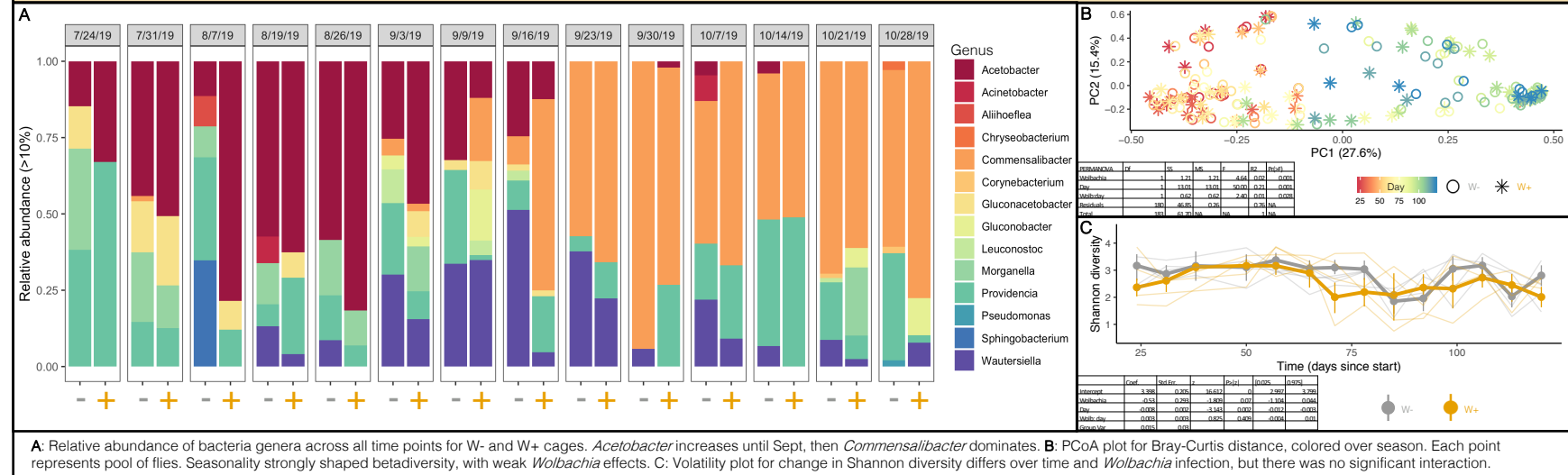
Wolbachia interactions affect seasonal evolution?



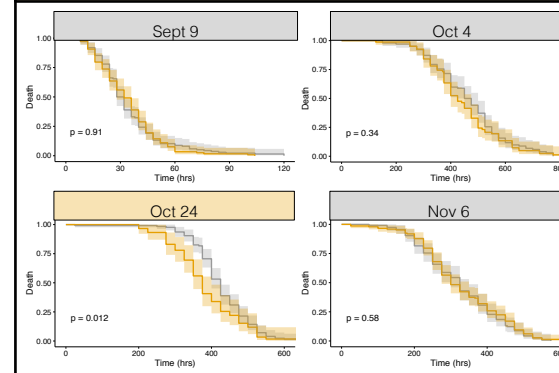
Sampling regime



Seasonality strongly shapes *Drosophila* microbiome, while *Wolbachia* infection modulates

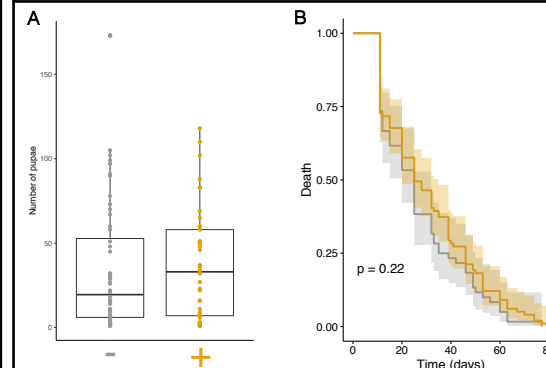


Wolbachia effects on starvation are context dependent



Starvation survival across the four different sampling points. Age-matched flies were starved, and then time to death was measured. *Wolbachia* infection status only affected starvation time for Oct 24. Here, W+ flies starved faster than W- flies. This suggests *Wolbachia* effects are frequently context dependent.

No *Wolbachia* effect on longevity of fecundity in seasonally adapted flies



Flies were collected at the first freeze as proxies for seasonally adapted flies. **A:** *Wolbachia* infection did not affect fecundity (pupae produced per female) for seasonally adapted flies (Kruskal-Wallis $X^2=0.44$, $p=0.50$). **B:** *Wolbachia* infection also did not affect longevity. While nearly 25% died in first 15 days, both W+ and W- had similar lifespans ($p=0.22$).

Conclusions & Future directions

- Seasonality strongly shapes the microbiome
- Wolbachia* modulates, but minimal effects on phenotypes
- Fitness benefits will depend on the eco-evolutionary context
- Future directions will focus on additional characterization of microbial variation and metabolomics

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