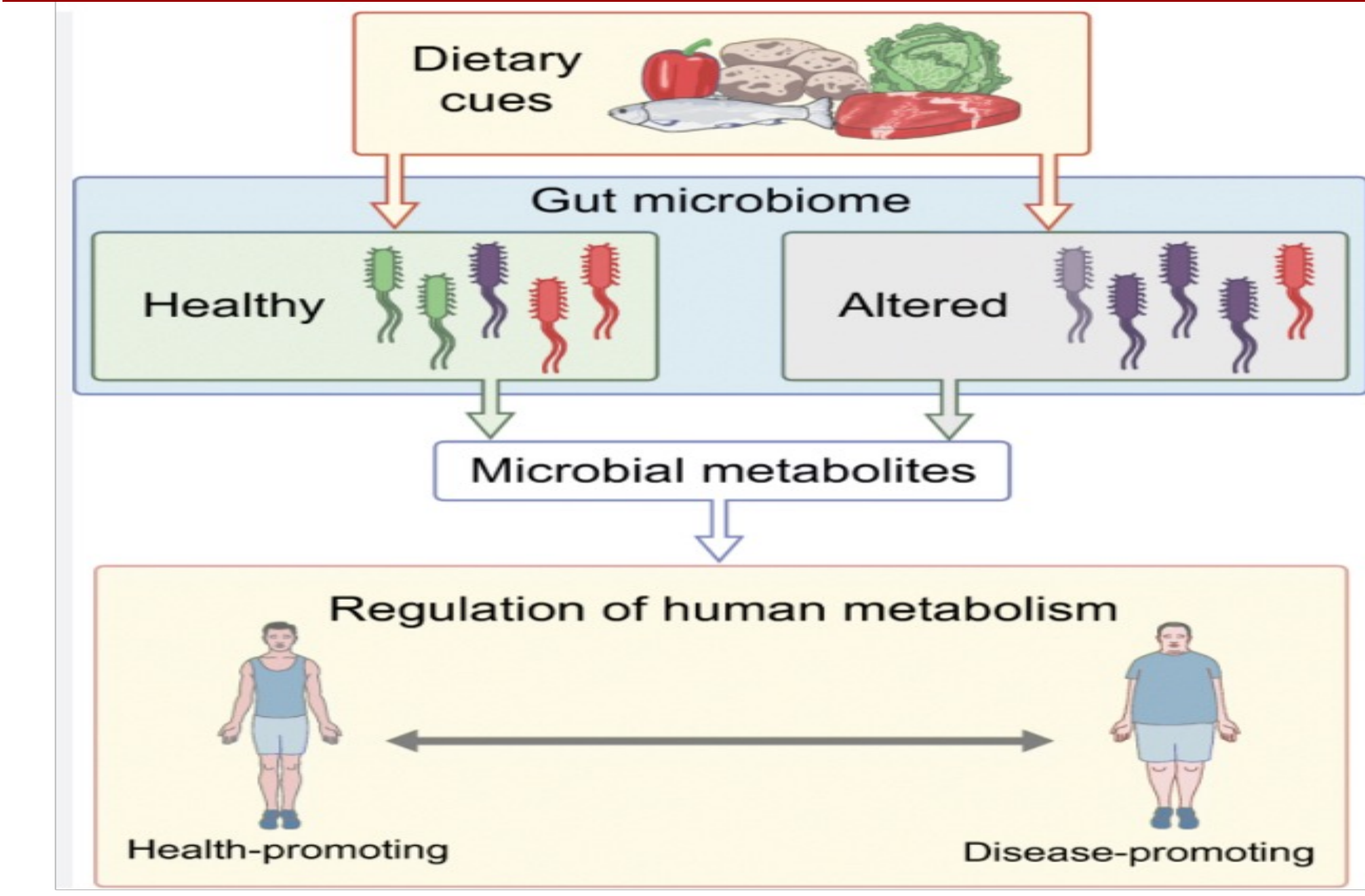


# Microbiota and metabolites of natural diets influence the nutritional traits of *Drosophila* larvae

Oluwatobi Fijabi, Derek Maas, & Laura K. Reed  
The University of Alabama

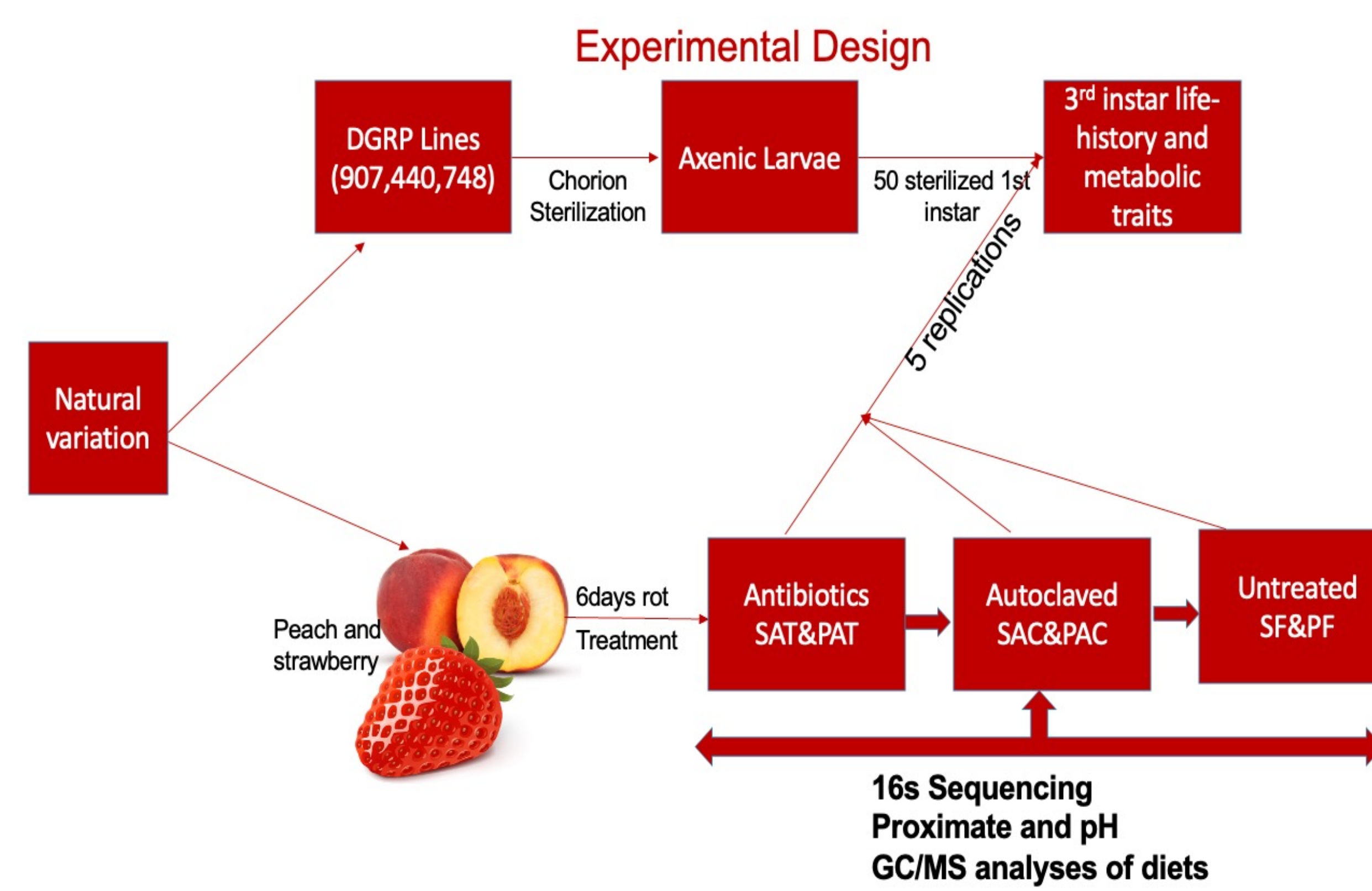
## Introduction



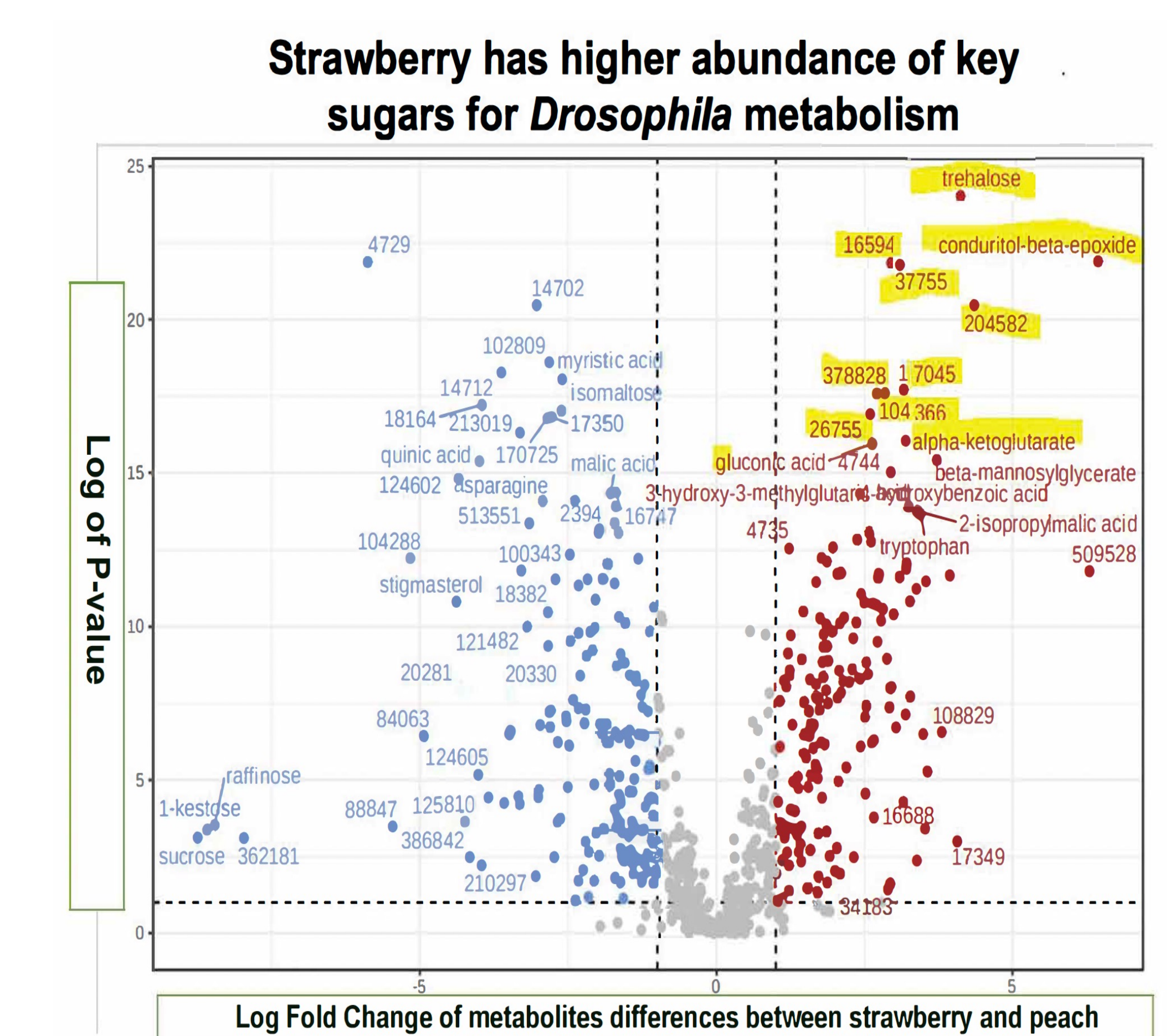
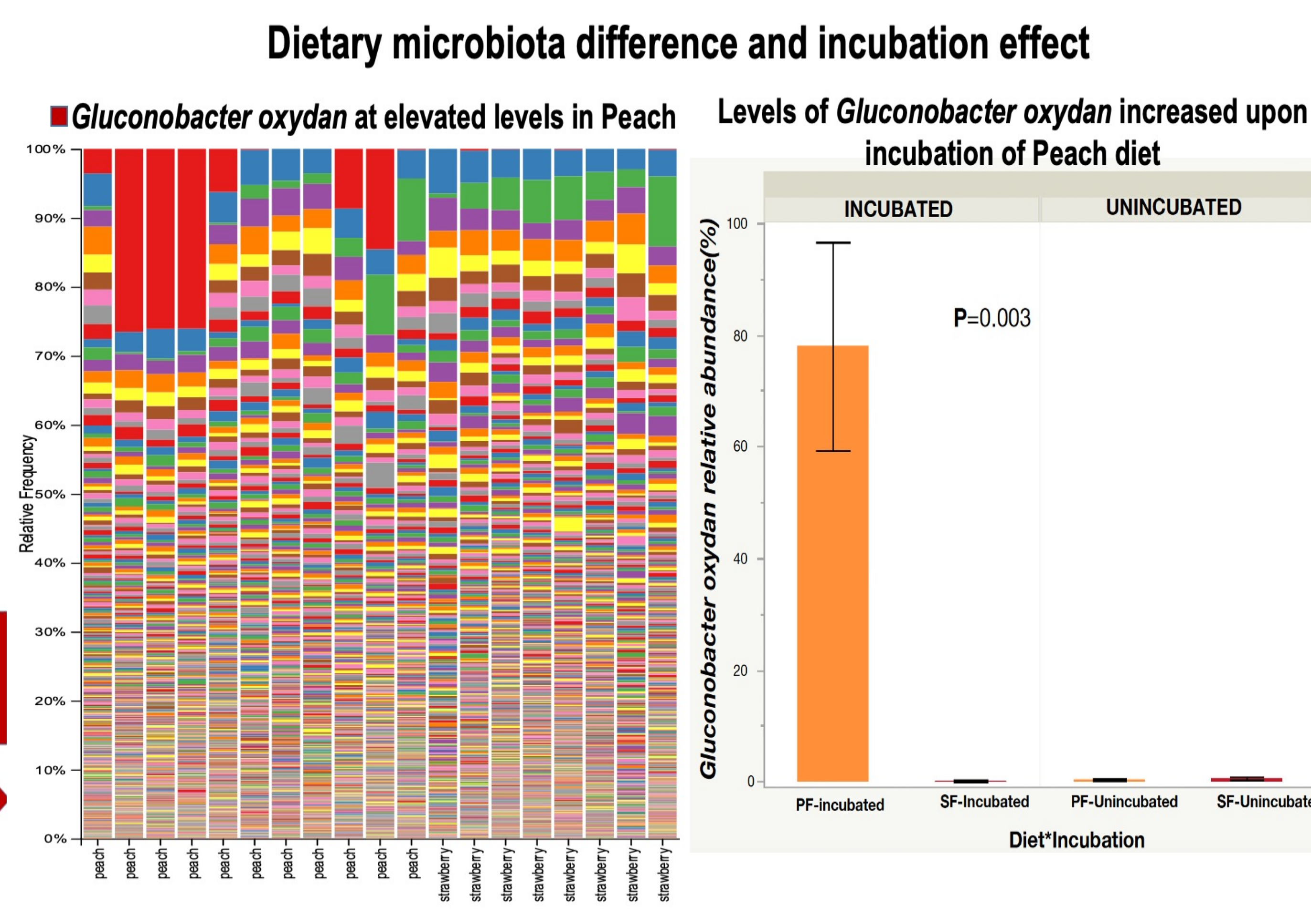
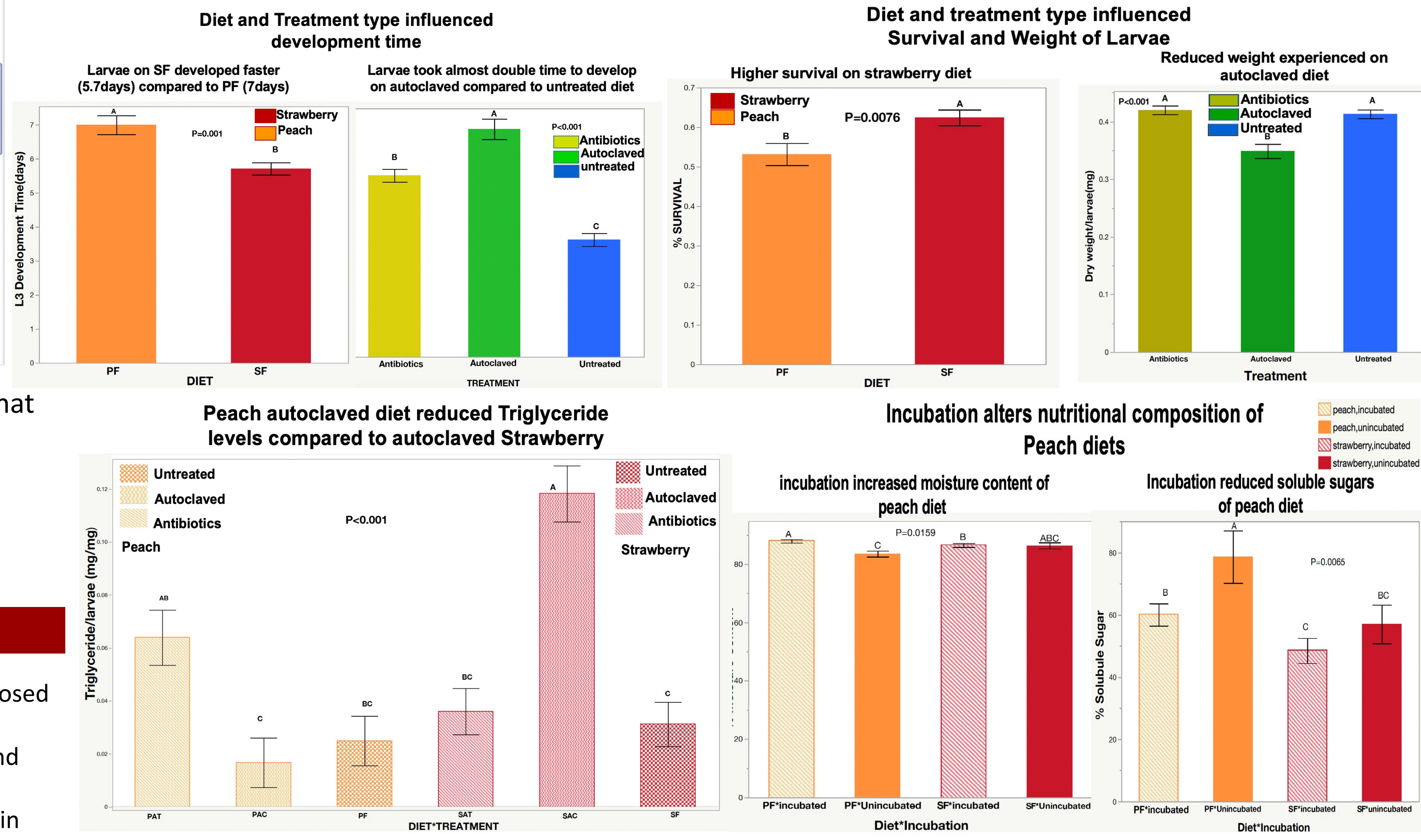
- Diet houses metabolites and microbiota that shape gut microbiome
- Microbiota influence nutrient sensing pathway<sup>1</sup>
- Dietary composition is critical for host metabolism

## Methods & Hypothesis

- Three DGRP lines were chorion sterilized and exposed to autoclaving and antibiotics food treatments<sup>2,3</sup>
- Performed untargeted GC/MS, 16S sequencing and proximate nutritional analysis of diet
- We measured life-history and metabolic markers in larvae
- We hypothesize differential response of larvae traits to fermented treated peach and strawberry diets



## Results



## Conclusions

- Our result shows differential response of larvae to peach and strawberry with or without microbial elimination treatments.
- Strawberry may be a better substrate for larvae's survival in the lab in comparison with peach
- Microbiota and type of treatment imposed on natural diets alters its nutritional composition
- Genotype-by-environment interaction impact metabolic and life-history traits of larvae

## Future direction

- Microbiome and metabolomic analyses of host
- Internal Transcribed Spacer (ITS) sequencing of diets

## References

1. Yan *et al.* Gut microbiota induce IGF 1 and promotes bone formation and growth. PNAS, 2016
2. Bombin *et al.* Influence of Lab Adapted Natural Diet and Microbiota on Life History and Metabolic Phenotype of *Drosophila melanogaster*. Microorganisms, 2020
3. Griffin LH, Reed LK. Effect of gut microbiota on  $\alpha$ -amanitin tolerance in *Drosophila tripunctata*. Ecol Evol., 2020

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## Autoclaved treatment uncovered toxic metabolites

