

# Bioconversion of oilseed crop residues by insects and associated microorganisms



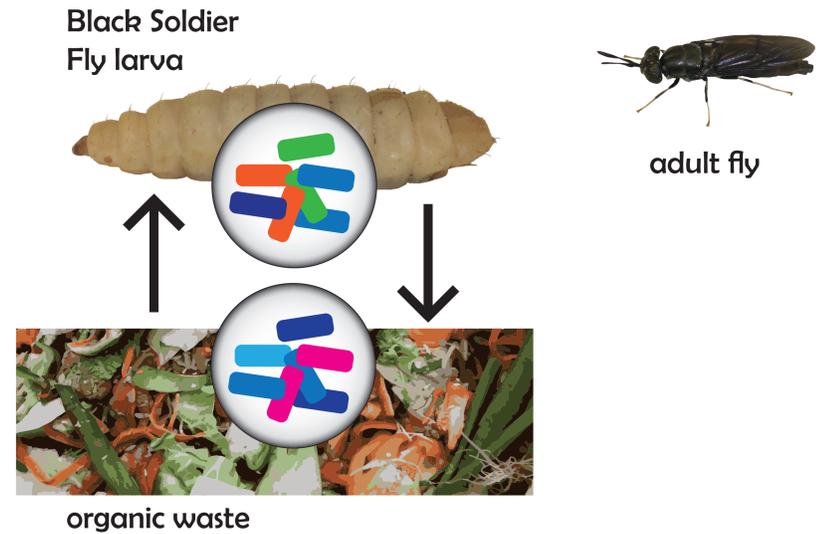
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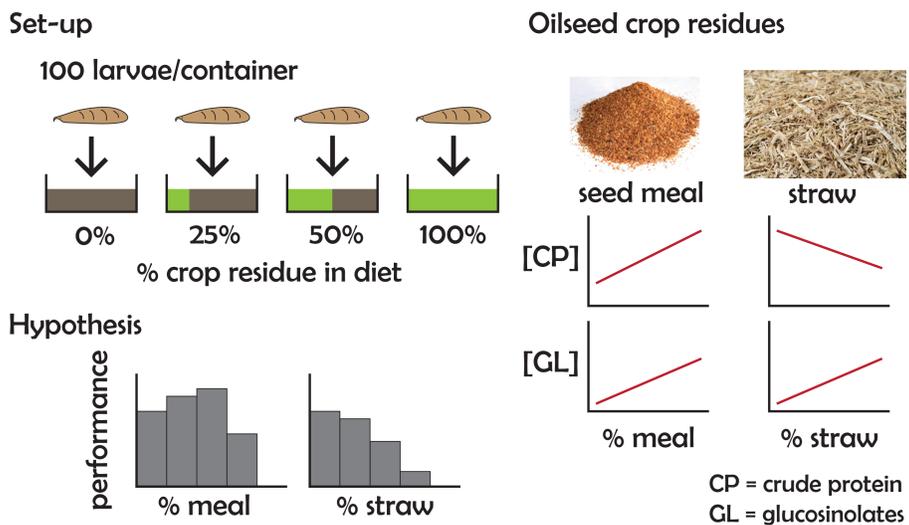
Larvae of the Black Soldier Fly, *Hermetia illucens* (L.), can convert organic waste into alternative protein sources for animal feed [1,2]. Interactions between this fly species and bacteria have been discovered [3-5], but little is known about the role bacteria play in waste bioconversion by the Black Soldier Fly.

We focus on the bioconversion of crop residues (straw and seed meal) of two oilseed crops, *Crambe abyssinica* and *Camelina sativa* [6], using Black Soldier Fly larvae. These crops contain glucosinolates to protect against herbivory [7].

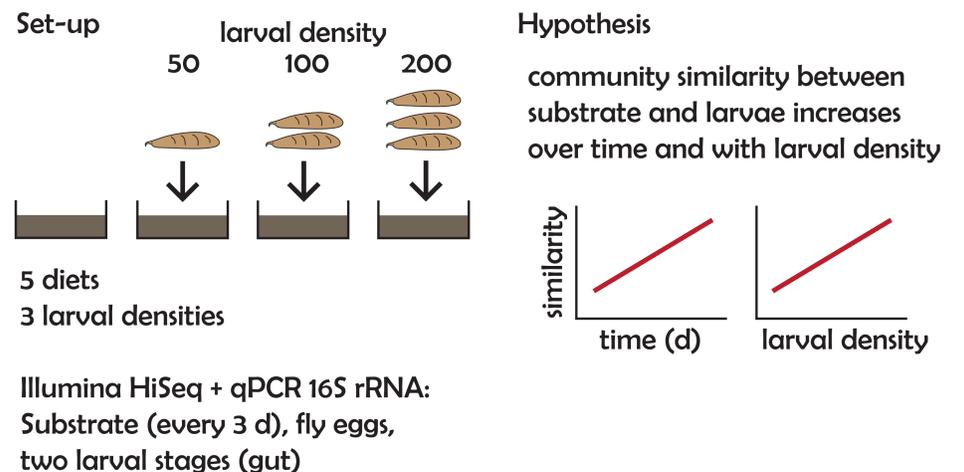
**Main research question:**  
 How do Black Soldier Fly larvae perform on the oilseed crop residues and what role do associated bacteria play in bioconversion?



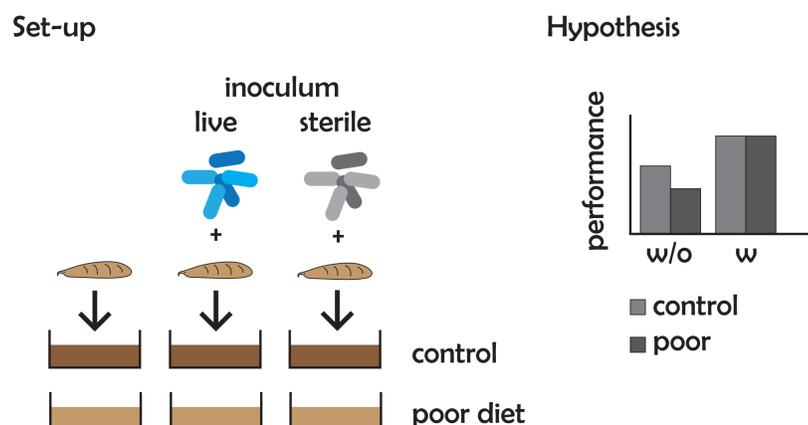
**Q1** What is the performance of fly larvae reared on different proportions of the oilseed crop residues in their diet?



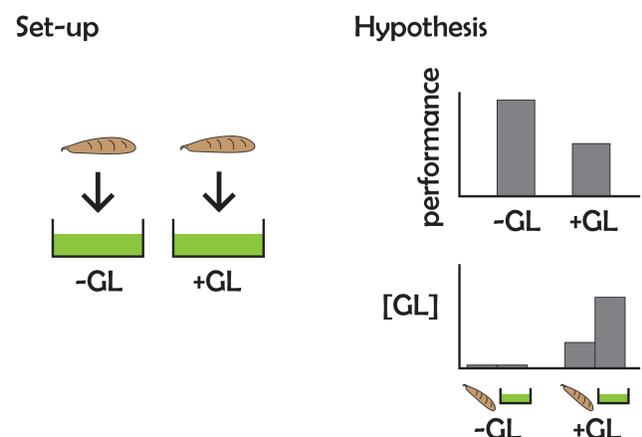
**Q2** How does larval density affect microbial succession in different types of organic waste and how does the larval gut microflora develop?



**Q3** What is the effect of a bacterial inoculum (a species characteristic of the larva, based on question 2) on the performance of fly larvae?



**Q4** How do glucosinolates (GL) influence the performance of fly larvae? Are GL sequestered or detoxified?



## Acknowledgements

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## References

[1] Van Huis (2013) Annu Rev Entomol 58: 563-83; [2] Barragan-Fonseca et al. in press; [3] Yu et al. (2011) Environ Entomol 40(1): 30-35; [4] Zheng et al. (2013) Sci Rep 3: 2563; [5] Park et al. (2014) Entomol Res 44(2): 58-64; [6] Righini et al. (2016) OCL 23(5): D504; [7] Matthäus (1997) Fett/Lipid 99(5): 170-174.