PLASTIC BIODEGRADATION LAB PRACTICES

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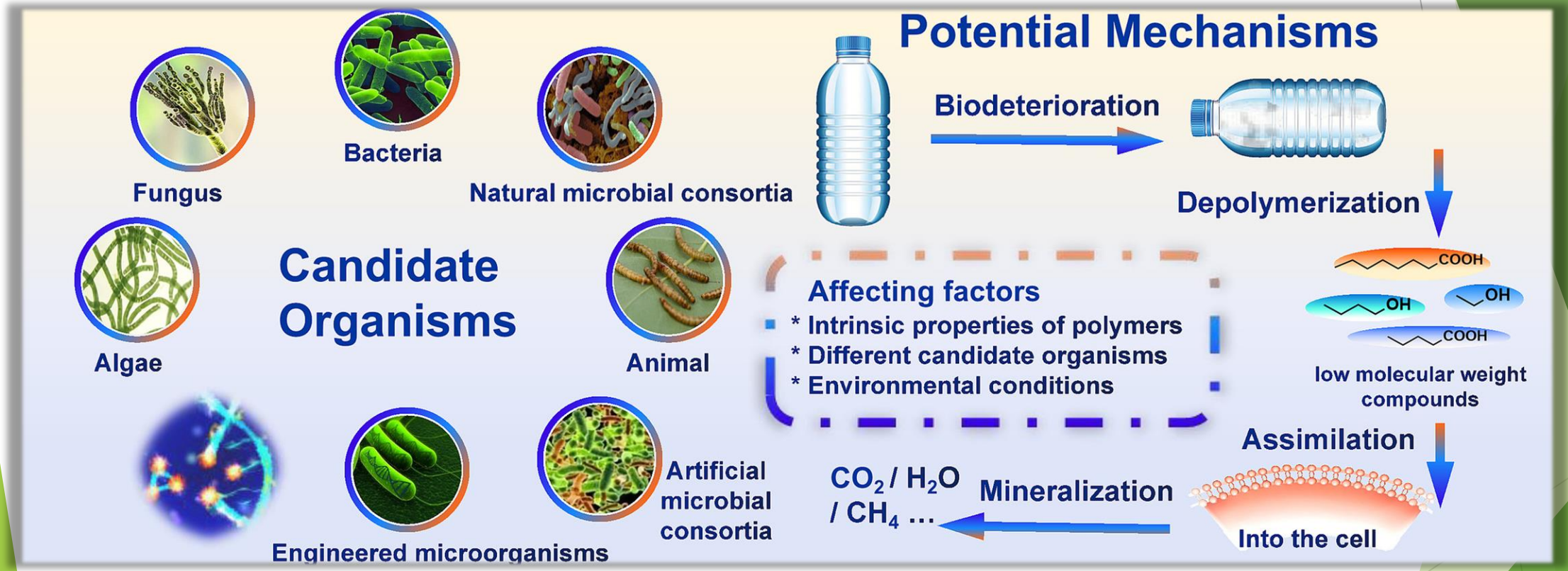
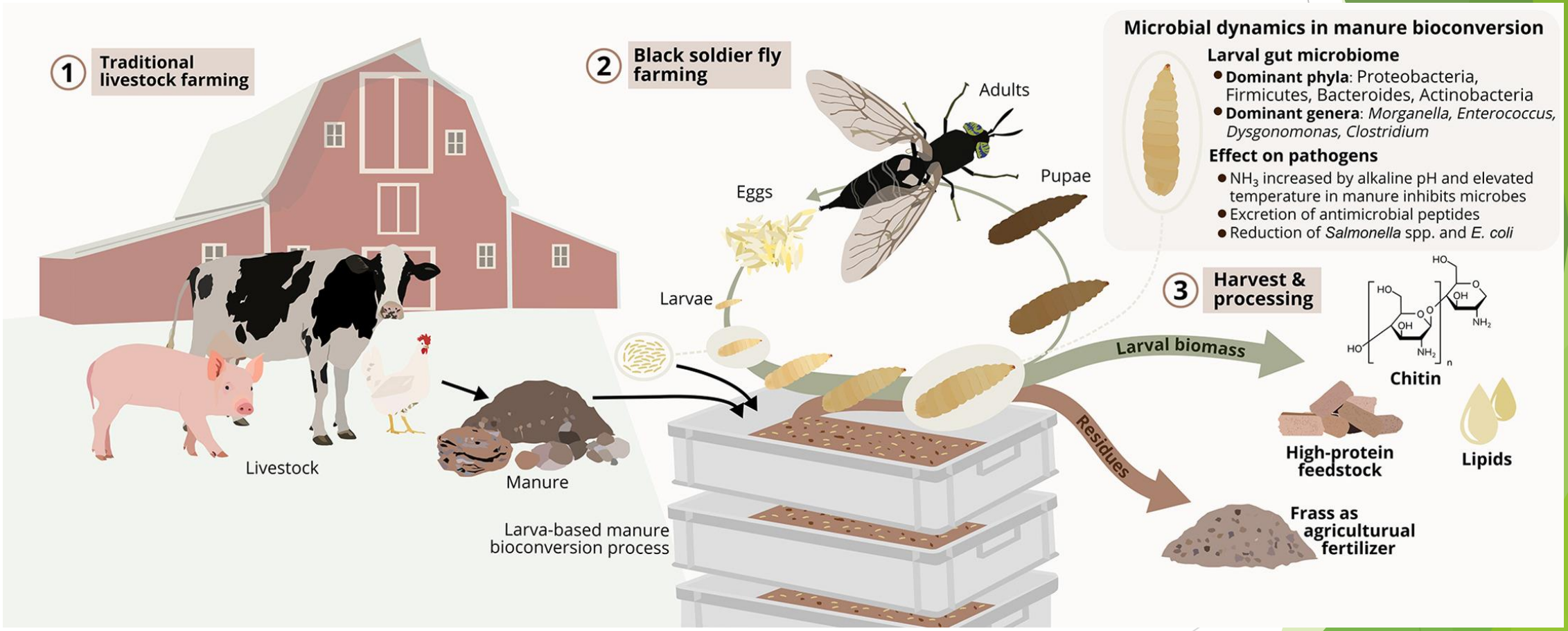
INTRODUCTION



BIODEGRADATION

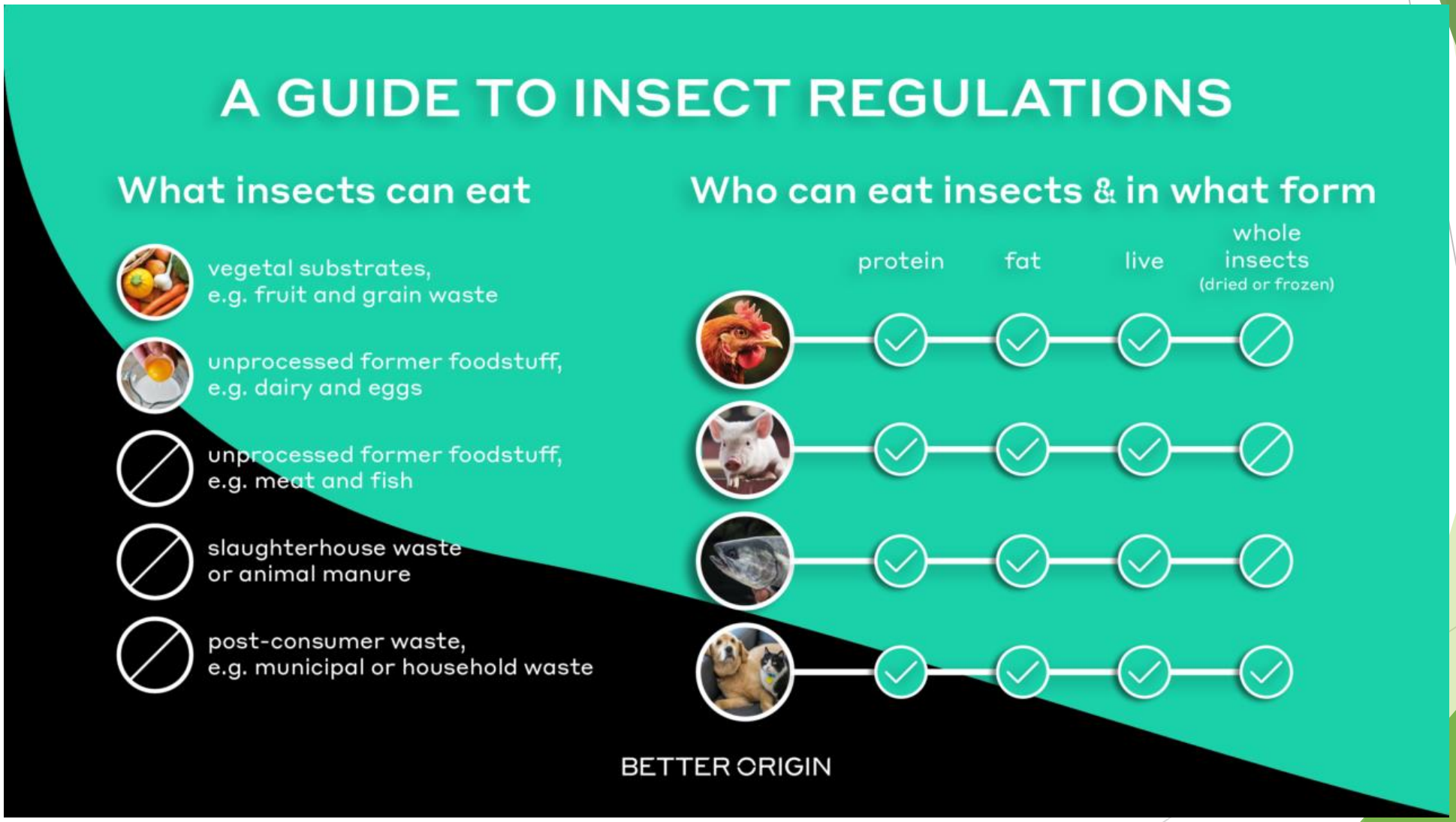
https://www.sciencedirect.com/science/article/pii/S0048969723025299

INTRODUCTION



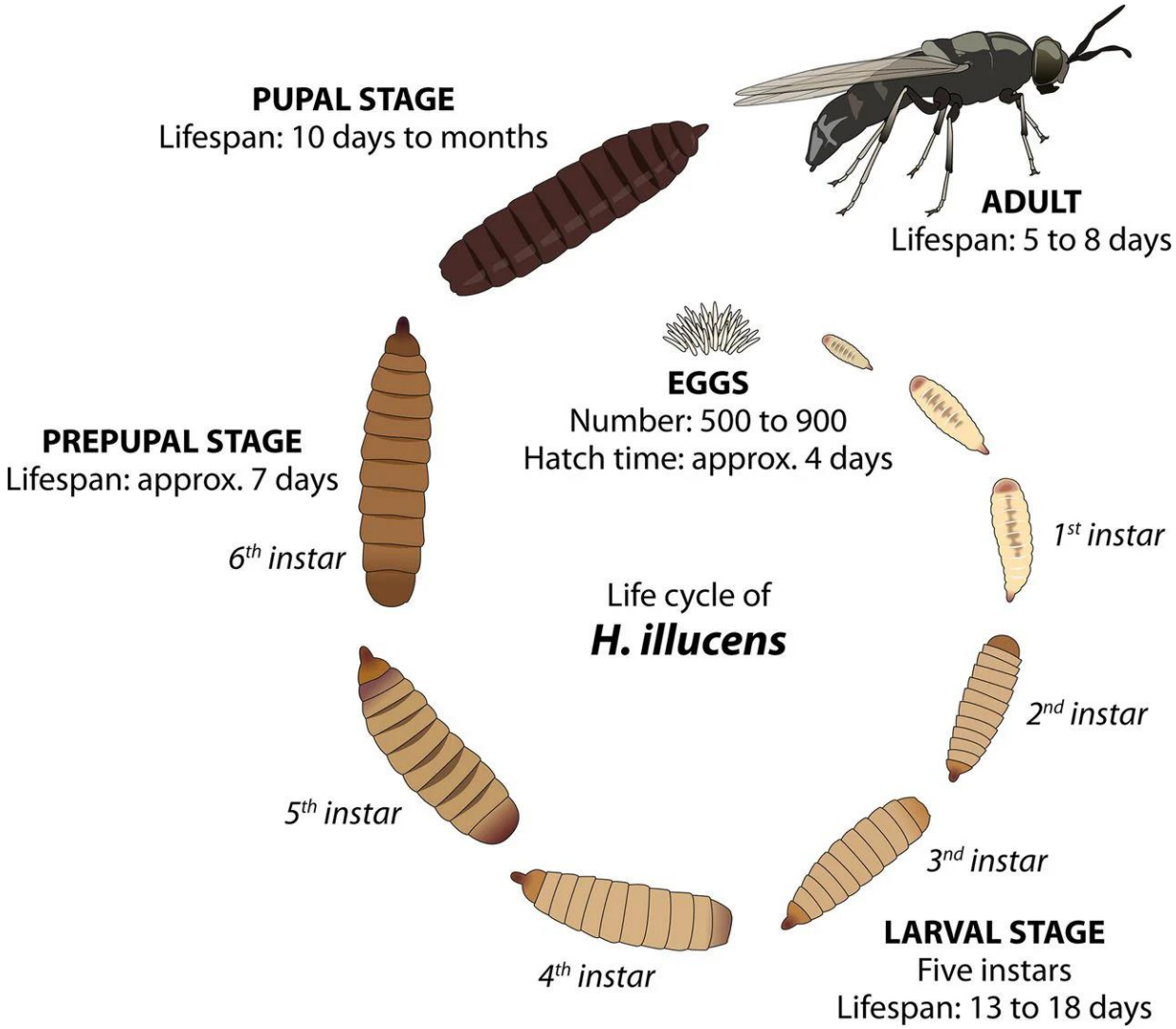
https://www.sciencedirect.com/science/article/abs/pii/S004896972202215X

INTRODUCTION



https://betterorigin.co.uk/2021/05/black-soldier-fly-guide/

INTRODUCTION



https://petwave.com.au/blogs/our-blog-2/black-soldier-fly-larvae-stages-of-life

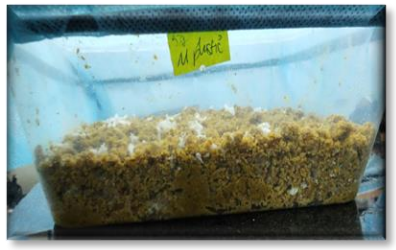
RESEARCH METHODS

Fly eggs

4 days

Hatching

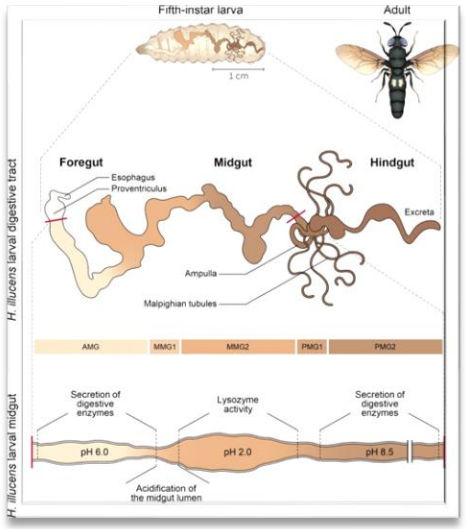
10 days after hatching



Add plastic, and microplastic to the standard diet

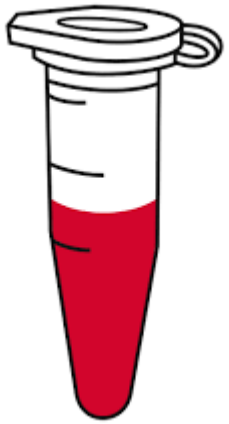
Metabolite analysis

RESEARCH METHODS



https://animalmicrobiome.biomedcentral.com/articles/10.1186/s42523-023-00261-9

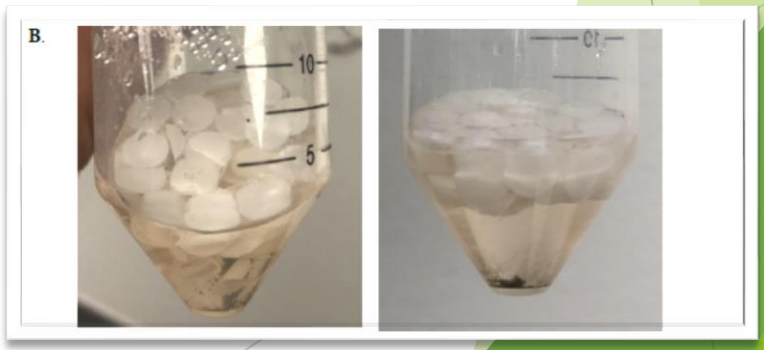
Isolate gut



Inoculate to PDA

5 days after inoculated

Inoculate to carbon-free media



After several months

Identification
Characterization
Modification

LAB SCHEDULE

Day 1:

- Prepare a standard diet.
- Hatching egg.
- Prepare the potato dextrose agar.
- Prepare carbon-free media.

LAB SCHEDULE

Day 2:

- Prepare a standard diet and a plastic diet.
- Feed larvae with a standard diet and a plastic diet.
- Take larvae gut and inoculate to PDA.

LAB SCHEDULE

- Standard diet: Chicken feed/water (1:1, w/v)
- Plastic diet: Chicken feed/water (1:1, w/v) + 0.5-1% plastic
- PDA:
  - 200g potato + 500ml H_2O: Boiling for 10 minutes and filter to collect broth.
  - 20g Dextrose
  - 20g agar
  - pH 7.0
  - dH_2O adjust to 1000ml

LAB SCHEDULE

- Carbon-free media:
  - 5.14mM KH_2PO_4
  - 4.02mM K_2HPO_4
  - 2.84mM $MgSO_4$
  - 12.37mM NH_4NO_3
  - 85.6µM NaCl
  - 7.19µM $FeSO_4$
  - 6.96µM $ZnSO_4$
  - 5.92µM $MnSO_4$

All stock were prepared at 100mM