



# Introduction to Insects

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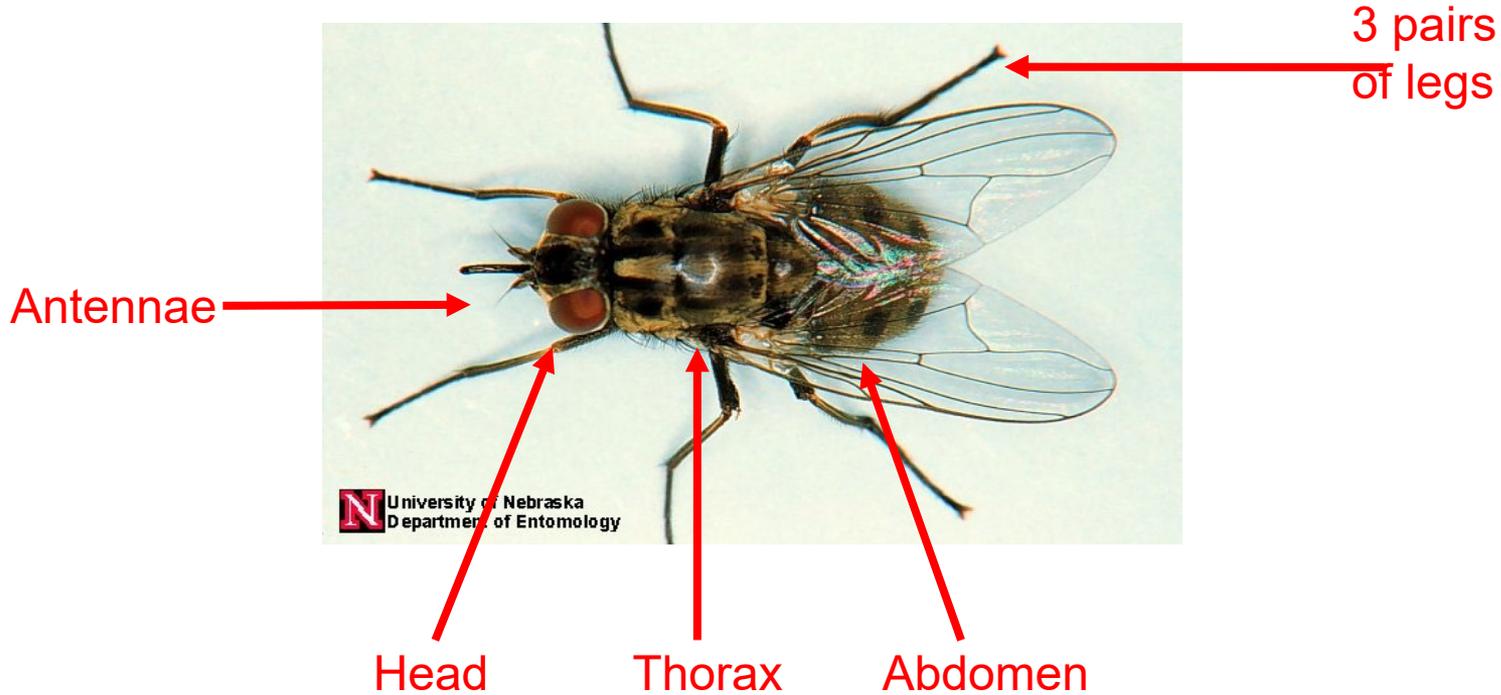


# What is an Insect?

- Phylum: Arthropoda, Class: Insecta
- Defining factors:
  - Three body segments (Head, abdomen, thorax)
  - Three pairs of legs
  - Two antennae



# What is an Insect?





# What is an Insect?





# Why are Insects Important?

- Represent more than half of all living species
- Pests
  - European Corn Borer
  - Mosquitos



# Why are Insects Important?

- Beneficials:
  - Pollination
  - Pest Control
  - Products





# Life Cycle

- Two types:
  - Incomplete Metamorphosis
  - Complete Metamorphosis



# Incomplete Metamorphosis



Adult

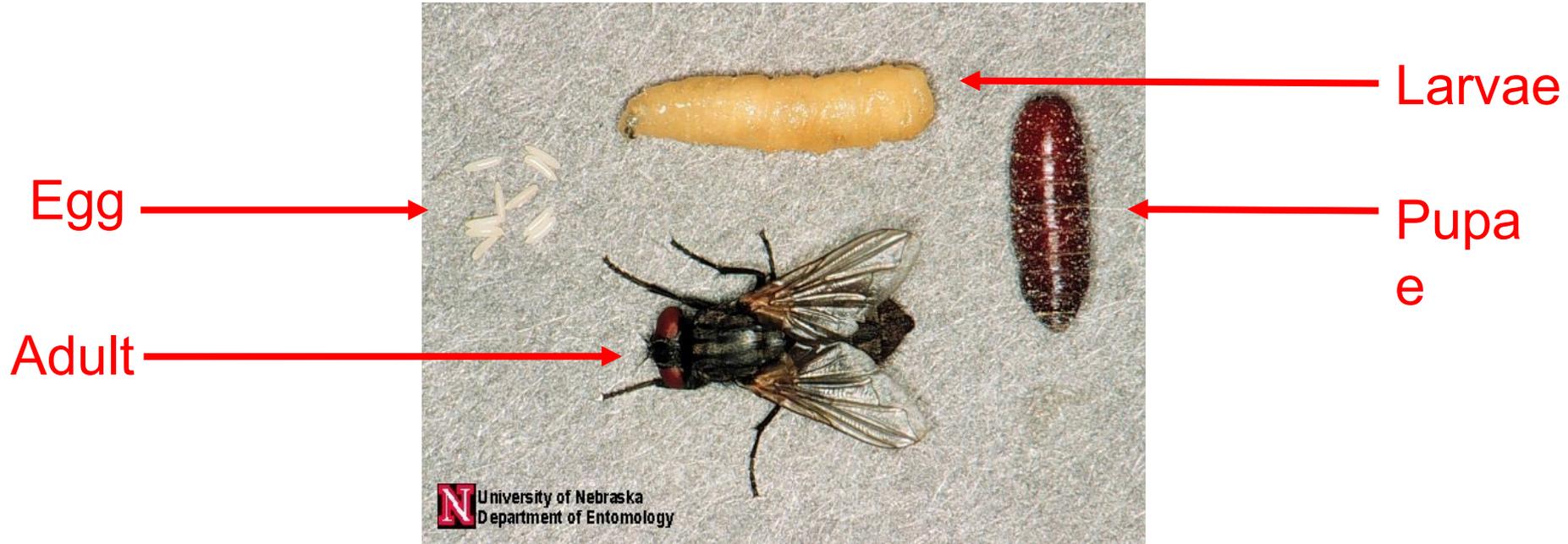
Egg

Nymph Stages

Photo courtesy of Jim Kalisch at University of Nebraska-Lincoln



# Complete Metamorphosis



# **Activity: Rearing Mealworms**



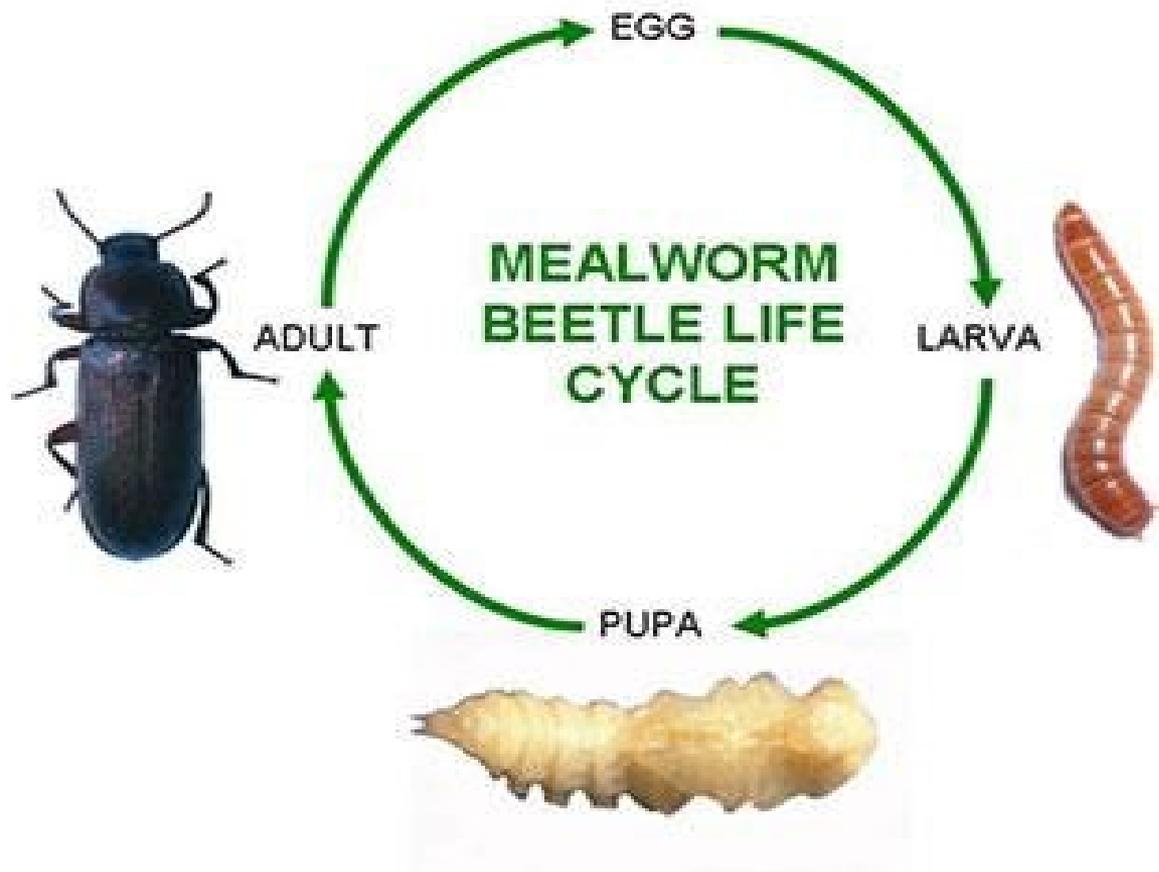
# Activity

Over the next few months, we will be rearing mealworms as a class to investigate the questions: “Does the food fed to mealworms impact their taste?”



# Mealworm Background

- *Tenebrio molitor* (Darkling beetle)
- Complete metamorphosis
- Temperate regions, in cool, dark, moist places





# Mealworm Diet

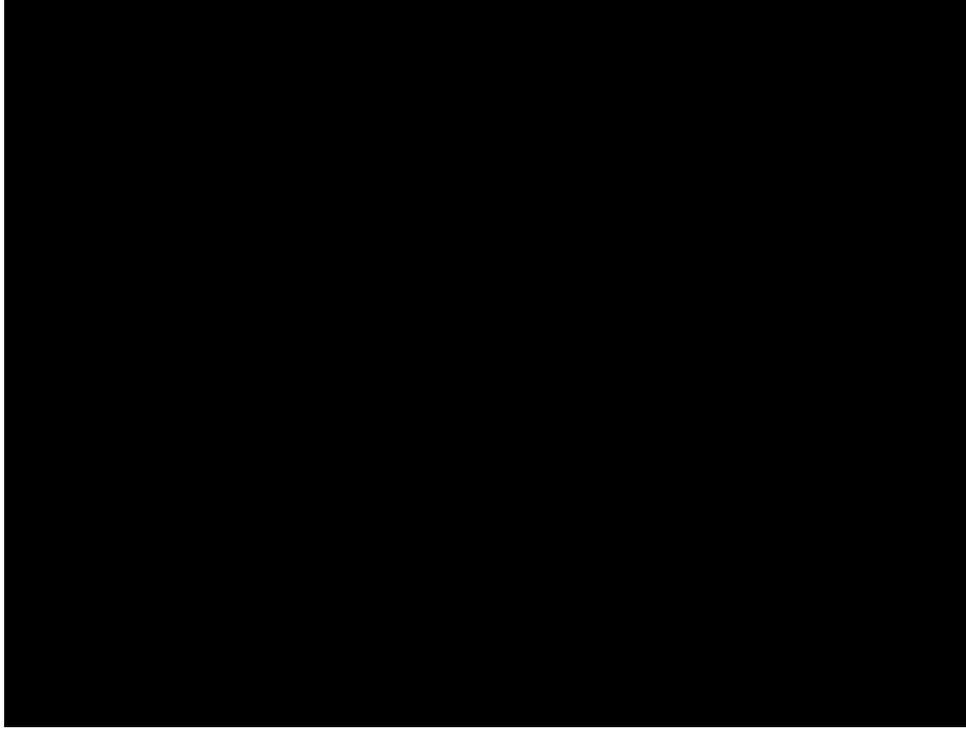
- Grains (bran, oatmeal)
- Decaying plant matter
  
- Does vegetable influence taste?



# Find the Life Stages

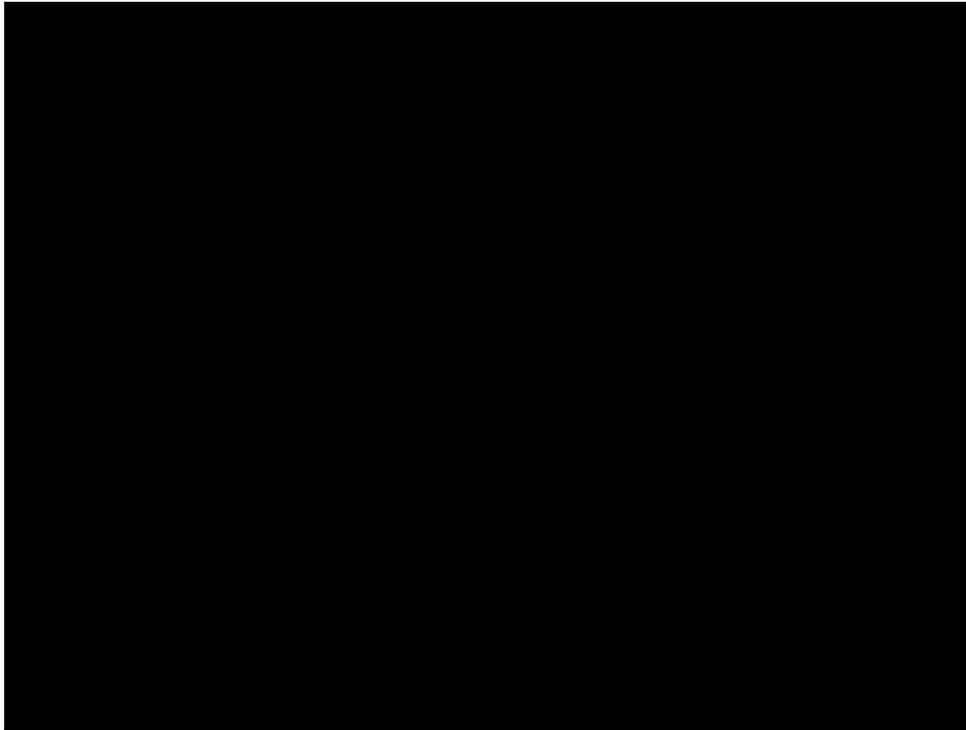
- Go into the mealworm cage and see if you can find the four life stages

# Egg



Eggs are very hard to find due to their small size. You may not be able to find any eggs.

# Larvae



Larvae are also known as mealworms. These are the insects you will be using for your experiment!

# Pupae



Pupae may look dead, but they are very much alive!

# Adult Beetles



Newly emerged darkling beetle (left video). Darkling beetles will become darker in color as they age.

# Adult Beetles



Videos of adults eating/crawling on carrot



# Entomophagy

- The use of insects as food by humans
- Practiced by 80% of nations with over 1000 species consumed
- Beetles, cicadas, butterflies, crickets



# Why Eat Insects?

- Cultural





# Why Eat Insects?

- Environmental
  - Lower GHG emissions
  - More easily reared
  - Questions about what impacts taste



# Experiment

- Feed mealworms either (insert vegetables for experiment here)
- Document development over time
  - Social Media Assignment
- Taste mealworms!