University of Salahaddin  
Department of Biology  
3rd Class Year

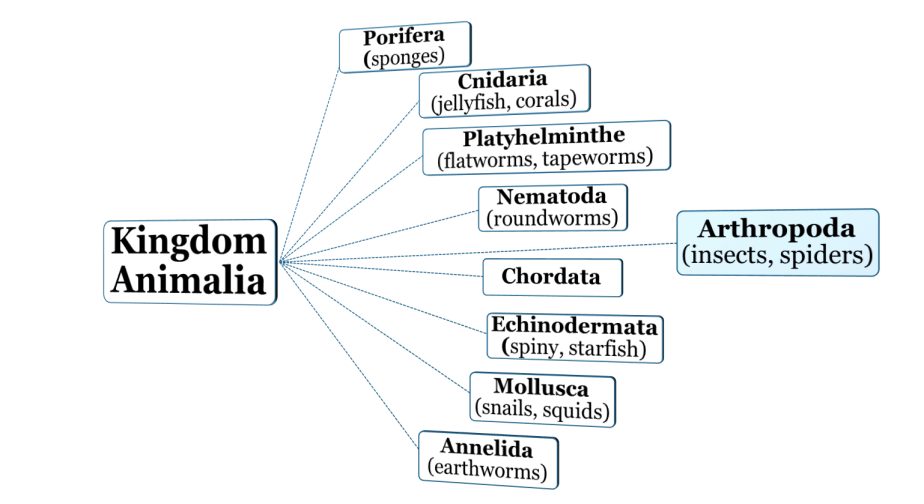
ENTOMOLOGY

**Entomology**

**Lab: 1**

**Insect Relatives-Arthropoda**

**Characteristics of Arthropods**

1. The Arthropoda (from the Greek Arthron, joint and podus, foot) are the largest group of organisms and they occur in all environments on earth.
2. The group includes: spiders, ticks, mites, centipedes, millipedes, crustaceans, insects and others.
3. The segmented bodies are arranged into regions, called tagmata (e.g., head, thorax, abdomen). Some have a cephalothorax (head and thorax are fused together).
4. The paired appendages (e.g., legs, antennae) are jointed.
5. They possess a chitinous exoskeletons for support and protection ,that must be shed during growth.
6. They have bilateral symmetry.
7. Arthropods use gills, tracheal tubes, or book lungs for gas exchange.
8. Arthropods use either coxal or green gland and malpighian tube for excretion.
9. Acute senses include simple and compound eyes, brains, and many ganglia.
10. They have open circulatory systems, complete digestive system.
11. Muscular system is complex and muscles attach to the exoskeleton.
12. ****Arthropods reproduce sexually, but some exhibit parthenogenesis.

**Classes of Arthropods**

* Class: Arachnida
* Class: Crustacea
* Class: Myriapoda (Chilopoda and Diplopoda)
* Class: **Insecta (hexapoda)**

**Class Arachnida**

* Spiders, scorpions and mites belong to this class.
* Spiders are the largest group of arachnids.
* Most arachnids have only 2 body regions- a cephalothorax and the abdomen.
* Most arachnids have 4 pairs of legs.
* Arachnids have 2 chelicerae for poisoning prey and 2 pedipalps for sensing and handling food.
* 4 remaining appendages aid in locomotion.
* no Antennae

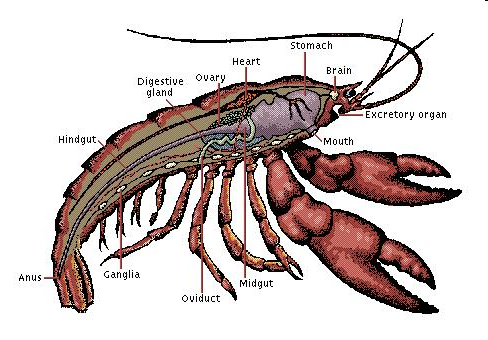


chelicerae

eyes

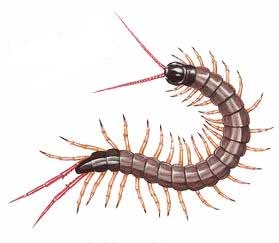
pedipalp

**Class Crustacea**

* Most crustaceans are aquatic and use gills for gas exchange.
* 2 pairs of antennae for sensing.
* Mandibles for crushing food that moves side to side.
* Many have five pairs of walking legs used for seizing prey and cleaning other appendages.
* First pair is often modified into strong claws.
* **Crabs, lobster, shrimp**

**Class Chilopoda and Diplopoda**

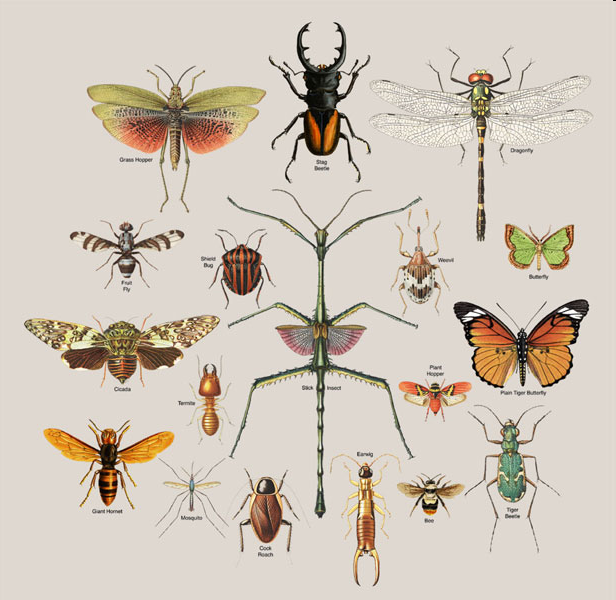
* Centipedes belong to class Chilopoda and millipedes belong to class Diplopoda.
* Centipedes are carnivorous and eat soil arthropods, snails, slugs, and worms.
* Centipedes have one pair of legs per visible segments
* Centipede bites are painful to humans (poisonous glands).
* Both have Malpighian tubes for waste excretion.
* Both have tracheal tubes for gas exchange.
* Millipedes eat mostly plants and dead material.
* Millipede have two pairs of legs per visible segments
* Millipedes also have stink glands for scaring predators (irritation).





Centipedes

Millipedes

**Class Insecta (hexapoda)**

* 3 body parts: head, thorax, abdomen
* 3 pairs of legs on the thorax
* 1 or 2 pairs of wings on the thorax
* 1 pair of antennae
* Life cycle has either incomplete or complete metamorphosis