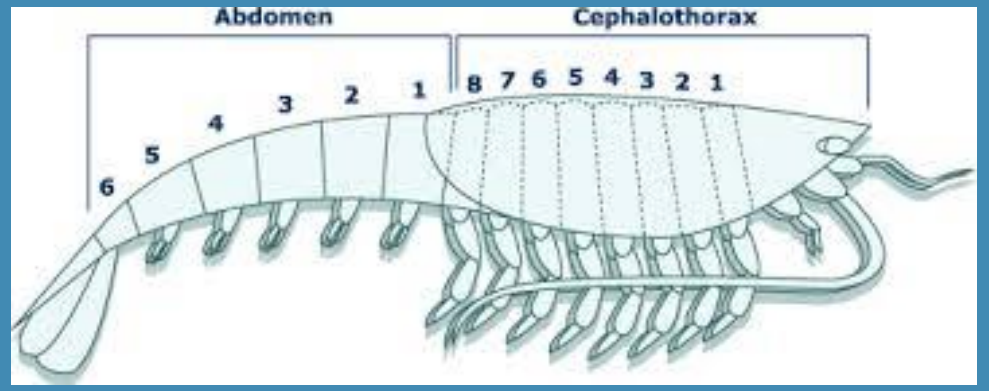
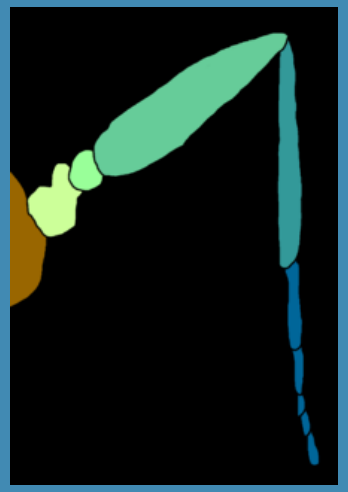
ARTHROPODS

- Most diverse and successful phylum in terms of number of species
  - ¾ of a million species have been identified
    - 3 x more than all other animal species combined
  - Include : spiders, insects, crabs and centipedes
- Complex interrelated organ systems

UNIFYING CHARACTERISTICS

- Segmented bodies
  - # varies among groups
- Tough exoskeleton
- Jointed appendages



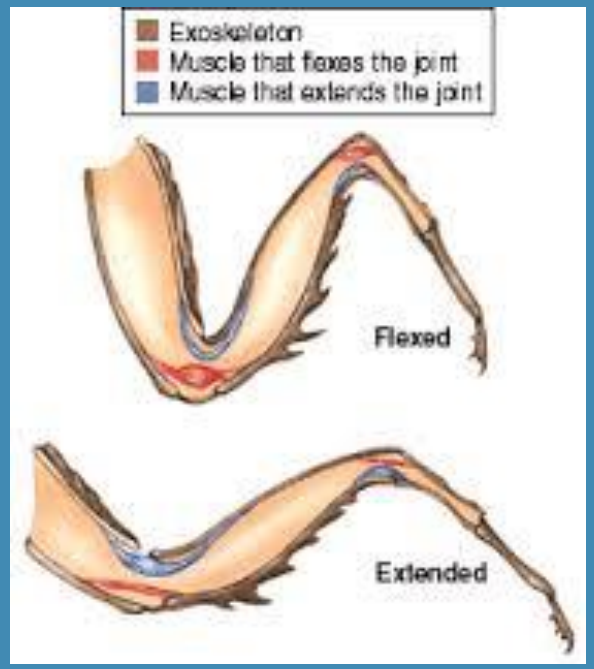


EXOSKELETON

- Protects and supports body
- Made from protein and a carbohydrate called chitin
- Vary in shapes, size and toughness
  - Ex: caterpillars= firm and leathery, crabs= tough and hard
- Land arthropods
  - Covered in a waxy covering to help prevent water loss

JOINTED APPENDAGES

- Extend from the body wall
- Structures have evolved into different forms
  - Antennae, claws, legs, wings , flippers, mouthparts, tails etc

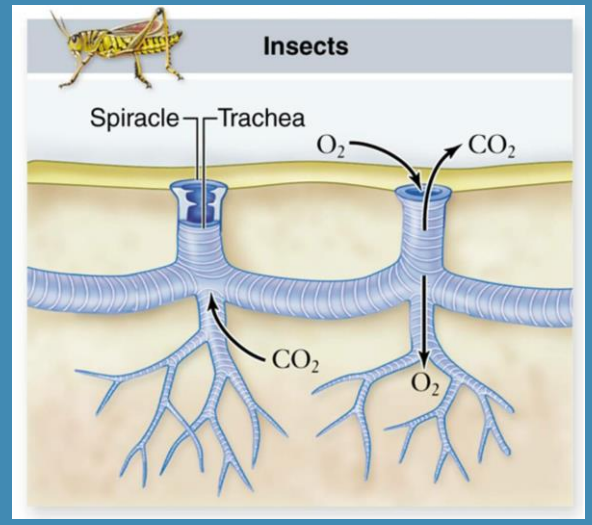


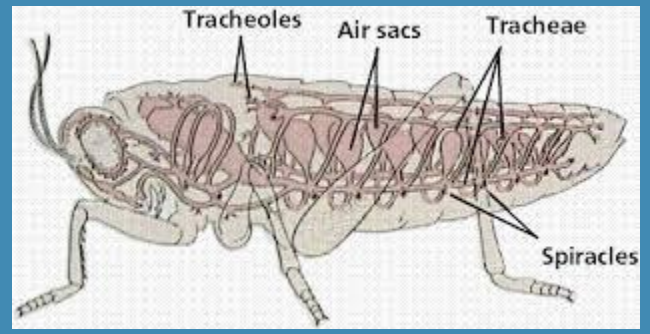
FORM AND FUNCTION

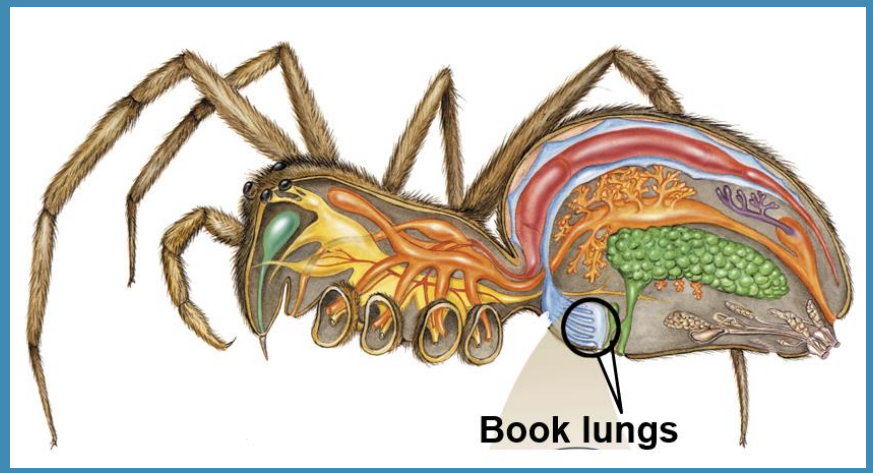
- Feeding
  - Herbivores
  - Omnivores
  - Carnivores
- Mouthparts have evolved in many ways that enable different species to eat almost any food imaginable.
  - Range from pincers → fangs→ jaws
    - Ex: Nut weevil

RESPIRATION

- Terrestrial
  - Breathe through a network of branching tracheal tubes
    - Extend through body
    - Air enters/leaves tracheal tubes through spiracles
      - Small openings along the sides of body
        - Grasshopper
  - Some have Book Lungs
    - Organs that have layers of respiratory tissue stacked like pages of a book
      - Spiders
- Aquatic
  - Featherlike gills
    - Lobsters, crabs

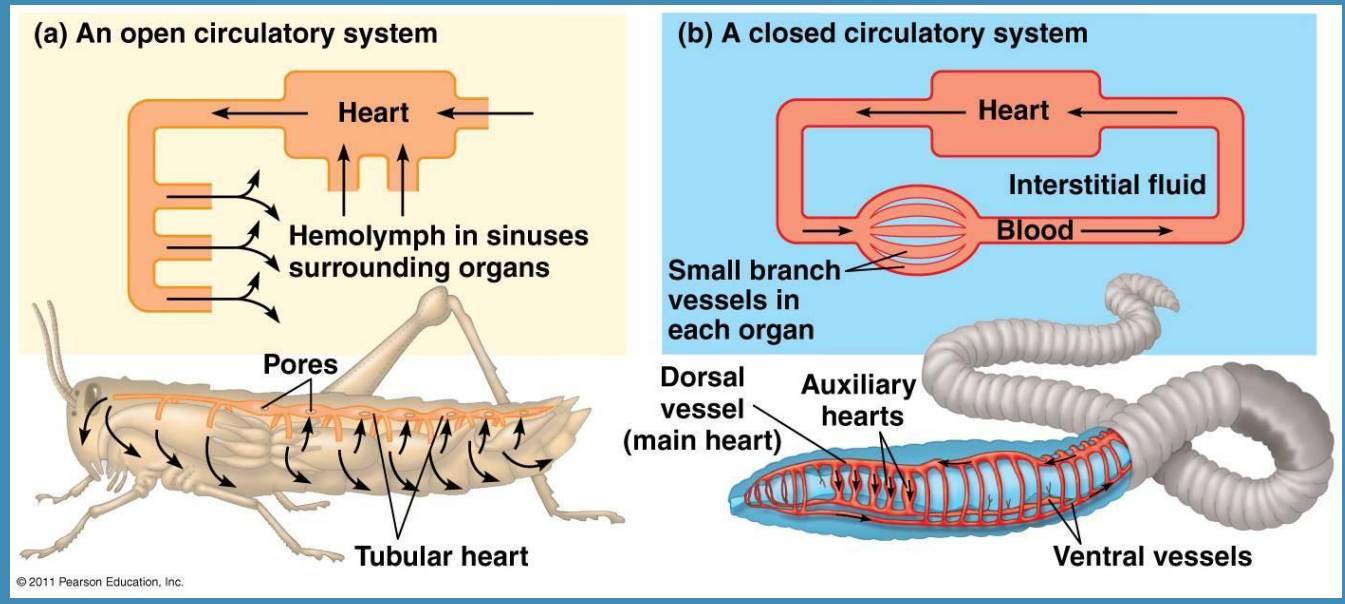






CIRCULATION

- Open Circulatory system
  - Well developed heart pumps blood through arteries that branch to enter tissues
    - Blood leaves vessels and move through sinuses
      - Blood collects in a large sinus surrounding heart
        - Re enters the heart and is pumped through body



EXCRETION

- Terrestrial
  - Malpighian tubules
    - Sac like organs that extract waste from blood and then add them to feces or digestive wastes that move through the gut
- Aquatic
  - Diffusion through tissues