Introduction to the Skeletal & Muscular Systems

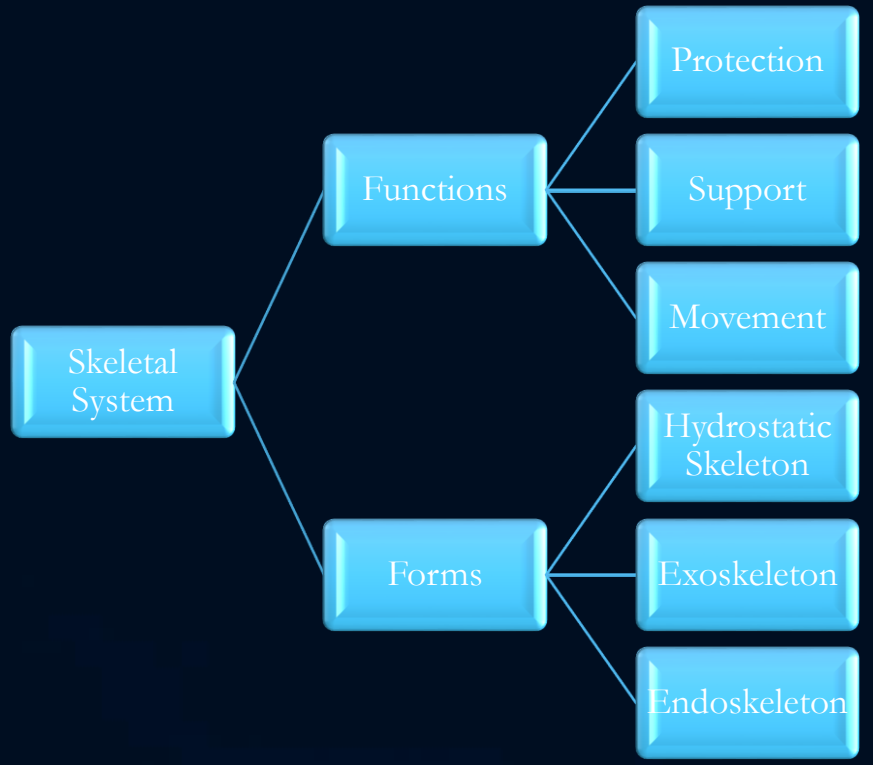
PACKET #21

The Skeletal System

ACROSS KINGDOM ANIMALIA

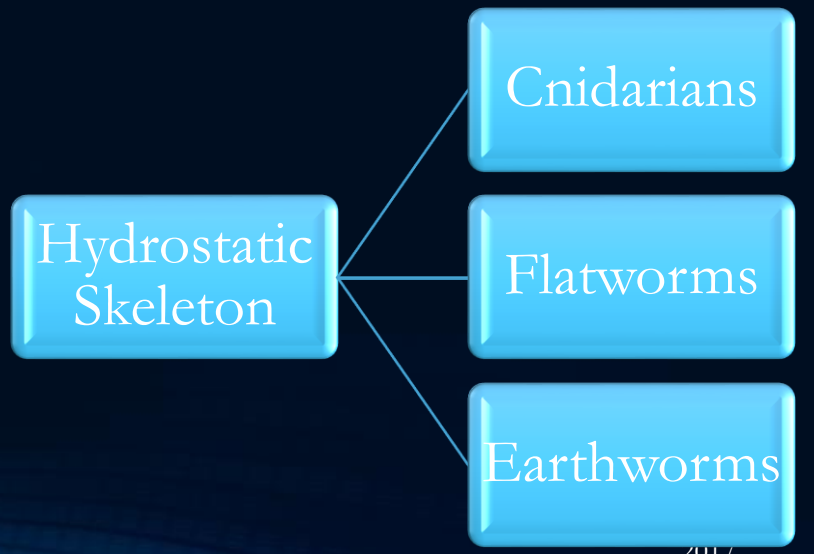
The Skeletal System

- The skeletal system has three main functions
  - Protection
  - Support
  - Movement
- Additionally, the skeleton can come in three different forms
  - Hydrostatic skeleton
  - Exoskeleton
  - Endoskeleton



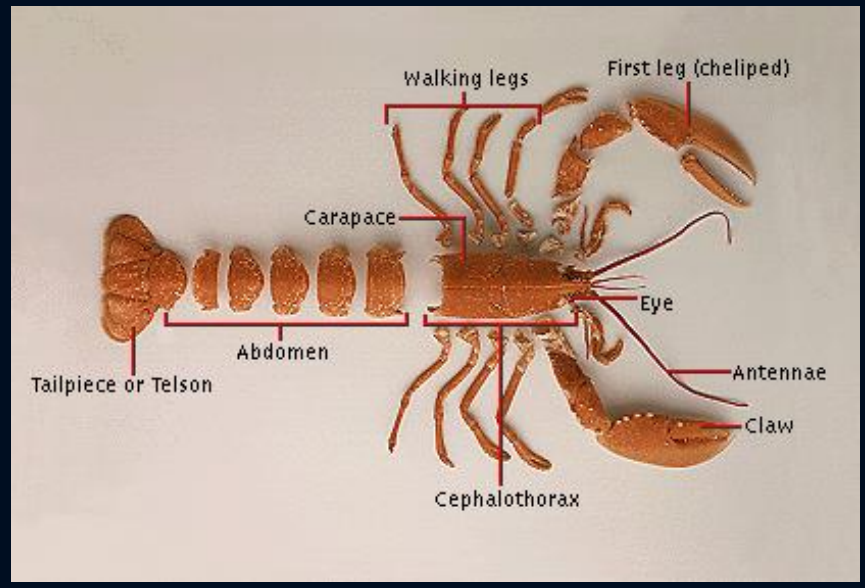
Hydrostatic Skeleton

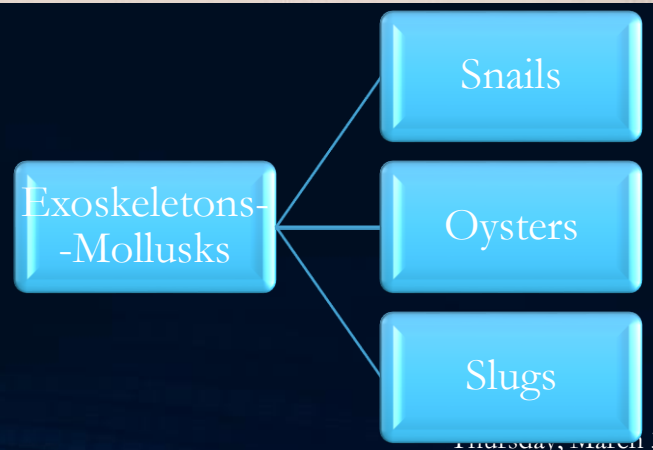
- Consists of fluid held under pressure in a closed body compartment
  - Cnidarians
  - Flatworms
  - Earthworms
- Move by using muscles to change the shape of the fluid filled compartments



Exoskeleton

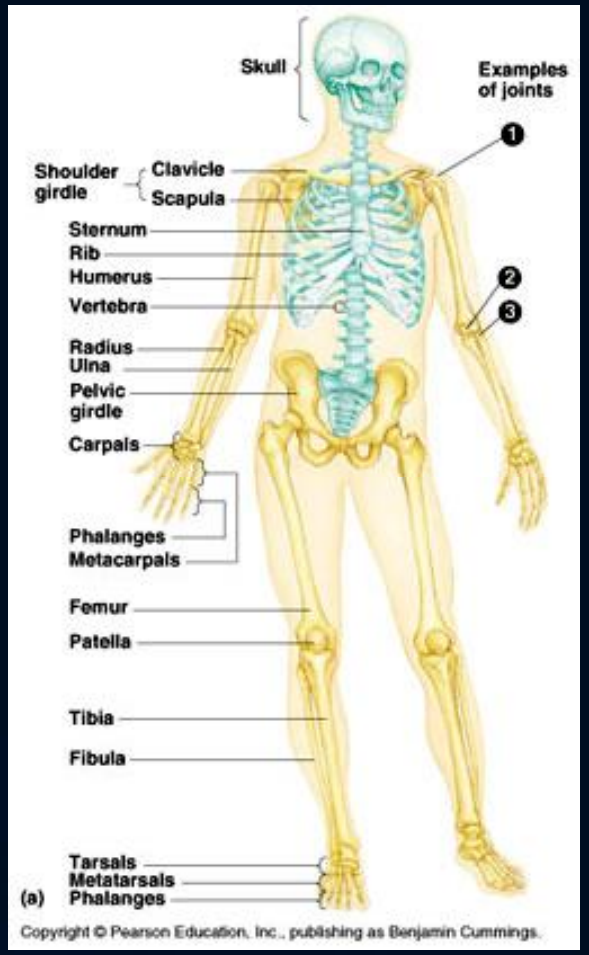
- Hard encasement deposited on the surface of an animal
  - Mollusks
    - Kingdom Animalia
    - Phylum Mollusca
      - Snails
      - Oysters
      - Slugs





Endoskeleton

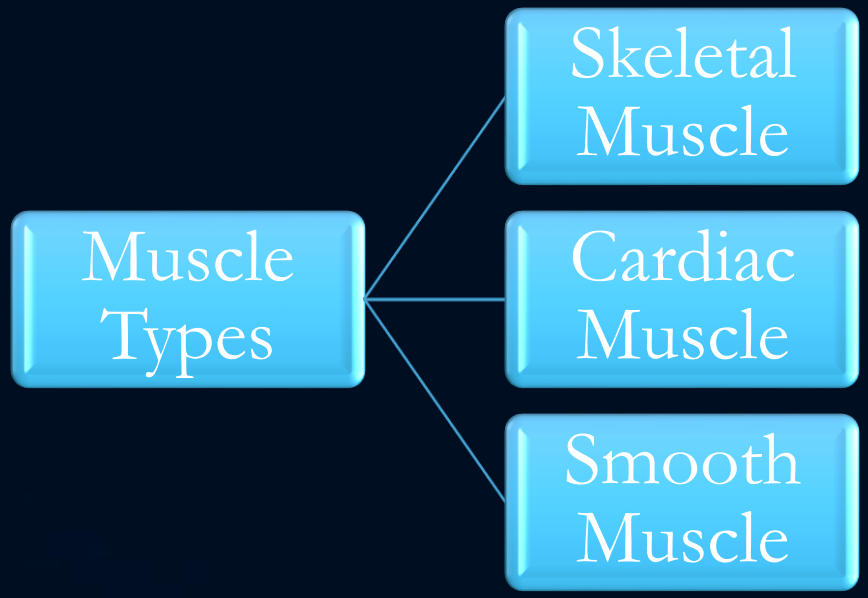
- **Endoskeletons**
  - Consists of hard supporting elements, such as bones, buried within soft tissues of an animal.
    - Humans
      - **Axial Skeleton**
        - Skull
        - 8 cranial bones
        - 14 facial bones
        - Vertebral column (backbone)
        - Rib cage
        - 7 pairs of true ribs
        - 3 pairs of false ribs
        - 2 pairs of floating ribs
      - **Appendicular Skeleton**
        - Limb bones
        - Pelvic girdles



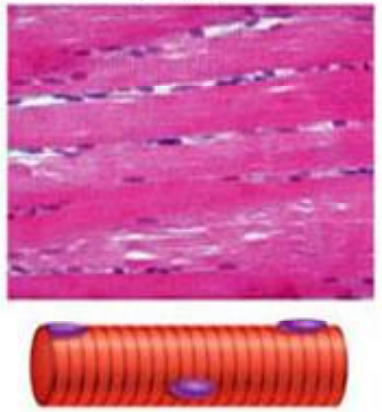
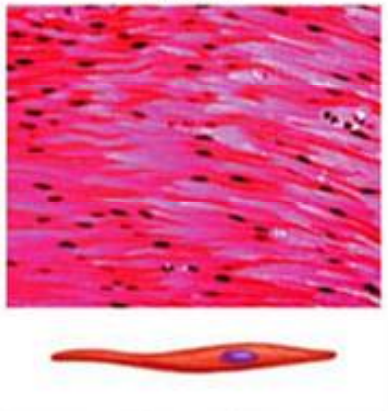
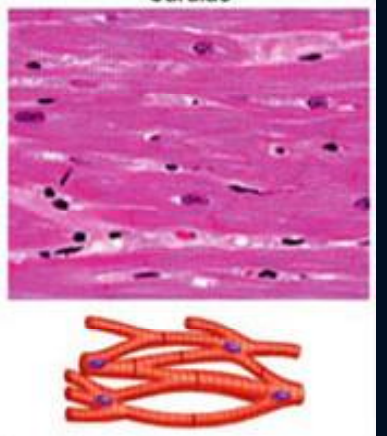
Muscular System

Muscular System I

- Responsible for animal movement
- Three types of muscle
  - **Skeletal muscle**
    - Attached to bones and causes movement of the body
  - **Cardiac Muscle**
    - Responsible for the rhythmic contractions of the heart
  - **Smooth Muscle**
    - Lines the walls of hollow organs
      - Lines the walls of blood vessels and the digestive tract



Types of Muscle

	Skeletal	Smooth	Cardiac
			
Location:	Attached to bones	Intestines, arteries, other	Heart
Function:	Move skeleton	Move food, help regulate blood pressure, etc.	Pump blood
Characteristics of cells:	• Multinucleate • Unbranched • Activity is "voluntary," meaning that signal from motor neuron is required	• Single nucleus • Unbranched • Activity is "non-voluntary," meaning that signal from motor neuron is not required	• Single nucleus • Branched; form direct cytoplasmic connection end to end • Activity is "non-voluntary," meaning that signal from motor neuron is not required

Review

- Students create, and review, their own charts