

Chapter 23-Invertebrates

Understand the key features of animals

- Animals possess all of the following characteristics
 - Multi-cellular
 - No cell wall
 - Obtain energy by consuming other organisms
 - Most reproduce sexually
 - They are motile at some point in the life cycle
 - They are able to respond rapidly to external stimuli

Be able to explain the difference between radial and bilateral symmetry

- Animals with radial symmetry can be divide into roughly equal halves by any plane that passes through the central axis
- Animal with bilateral symmetry can be divided into mirror-image halves only along one plane that runs down the midline

Know the major animal phyla and distinguishing characteristics of each

- **Phylum porifera**
 - Sponges have a simple body plan
 - found in most marine environments
 - Immobile
 - They may reproduce asexually by budding, where the adult produce miniature versions of itself that drop off and assume an independent existence
 - They may reproduce sexually through fusion of sperm and eggs
 - Sponges have no true tissues or organs
 - The sponge body is perforated by tiny pores through which water passes and by fewer, large openings through which water is expelled
 - As water passes through the sponge, oxygen is extracted, and microorganisms are filtered out and digested by individual cells
 - Some sponges contain chemicals useful to humans
 - A number of chemicals within sponges have proved to be valuable medicines
 - The drug spongistatin is an emerging treatment for the fungal infection that sickens AIDS patients
 - promising new cancer drugs
- **Phylum Cnidarian**
 - Cnidarians are well-armed predators
 - Includes: sea jellies, sea anemones, corals, and hydrozoans
 - mostly marine and are all carnivorous predators
 - lack true organs and have no brain, but rather a network of nerves that controls movement and feeding behavior
 - Have stinging cells called cnidocytes that are used to capture prey and for defense
 - Cnidocytes contain a finely coiled filament that is explosively expelled when the trigger is touched

- Some filaments inject poison into the prey
 - Other either stick to or enlarge small prey
 - The venom of some can cause extreme pain or death in humans
 - Jellyfish stings
 - urinating on a jellyfish sting will not help ease the pain, and may even make it worse
 - Rinse the stings with seawater or vinegar and baking soda to deactivate the tentacles
 - Then apply shaving cream to the sting area and shave the skin to remove excess tentacles. If you're without a razor, a credit card will work.
 - The box jellyfish
 - One of the 10 most venomous creatures on the planet. Found mainly in ocean waters between Australia and Hawaii
 - Stinging cells are ejected at an amazing speed. Accelerates at a rate of over 1 million times the force of gravity (Rocket launches are about 5 times)
 - Sting is painful enough to induce shock or cardiac arrest in a human. Over 100 people killed.
- **Phylum Ctenophora**
 - Comb jellies belong to the phylum Ctenophora
 - Appear similar to cnidarian, but use cilia to move
 - Eat tiny invertebrate animals that they capture with sticky tentacles
 - Hermaphroditic and can release both eggs and sperm into seawater; fertilized eggs gradually develop into larvae and then adults
- **Phylum Platyhelminthes**
 - May be parasitic or free living
 - Include flatworms
 - Many species are parasites and live within the body of another organism
 - Non-parasitic, free-living flatworms inhabit aquatic and moist terrestrial habitats