


Phylum Annelid (sec 25.4)

SEGMENTED WORMS



- Animals with a body plan consisting of segments
- Display bilateral symmetry (like flatworms and roundworms)
- Over 11,000 species of annelids, most of which live in the sea
- Most have a larval stage that is similar to the mollusks suggesting that annelids may be more closely related to mollusks than round or flatworms
- Have a coelom see-lum
 a type of fluid-filled cavity that has tissue that lines and encloses organs
- Have 2 body openings like roundworms (mouth and anus)
- Externally, annelids looks like a stack of thick coins put together
- The fluid within the coelom gives the annelids rigidity and this creates a hydrostatic skeleton for the muscles to push against
- Segments can move independent from one another

Diversity of Annelids

The Phylum Annelid is divided into 3 classes

- 1) Polychaeta poly - Keets
- 2) Hirudinea Hi - roo - diea
- 3) Oligochaeta Oli:go - Keets

Marine Annelids - Class Polychaeta (ocean/sea)

- Bristleworms* - have body segments called parapodia
- Fanworms* - sessile, filter feeders

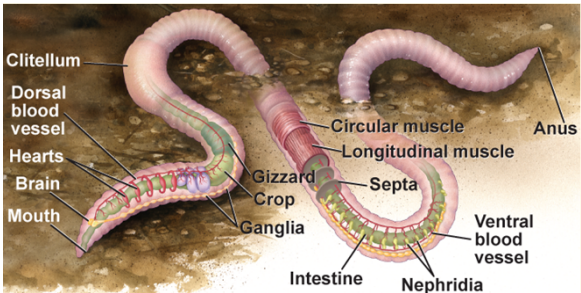
Leeches - Class Hirudinea

- External parasites with flattened bodies
- Most live in fresh water or rivers and attach to their hosts

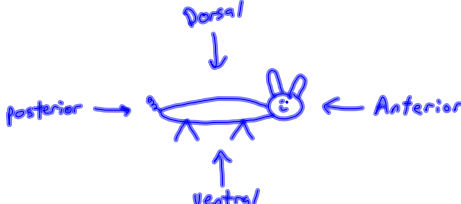
Earthworms and others - Class Oligochaeta

- Tubifex worms and lumbricid worms,

The Earthworm



Labels in diagram: Clitellum, Dorsal blood vessel, Hearts, Brain, Mouth, Gizzard, Crop, Ganglia, Intestine, Nephridia, Circular muscle, Longitudinal muscle, Septa, Ventral blood vessel, Anus.



Earthworm Respiration and Excretion

- Earthworms take in oxygen and get rid of carbon dioxide through their moist skin
- Earthworms have 2 nephridia in each segment
 structures where metabolic wastes are eliminated from annelids cellular waste cell processes
- Cellular waste products are collected in the nephridia and transported through tubes out of the body
- Nephridia also help maintain body fluids and homeostasis for the worm

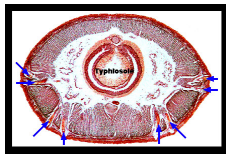
Earthworm Nervous System

- Earthworms can detect both light and vibrations
- The anterior end (front) are modified for sensing the environment
- Earthworms have a brain and nerve cords composed of ganglia

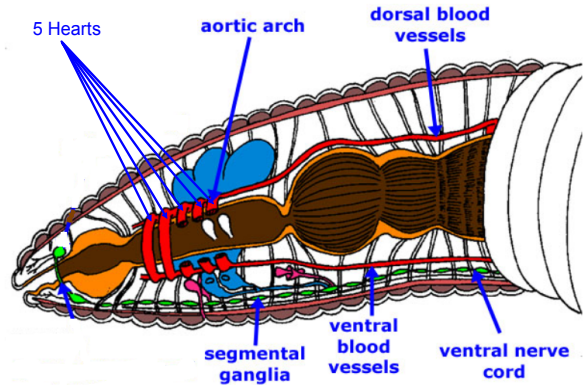
Movement

- Each segment in an earthworm has circular muscles that go around the segment
- the earthworm will squeeze these muscles and that will cause the worm's body to get longer and skinnier. Next, the worm will contract these muscles and that will cause the worm's body to get shorter and fatter. This muscle action results in movement
- Many annelids have setae on each segment

tiny bristles that push into the soil and anchor the worm during movement



Earthworm Circulatory System



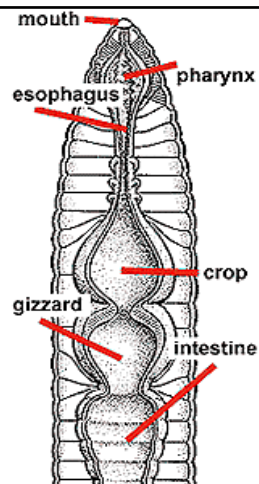
- Earthworms have 5 hearts
- The Earthworm has a closed circulatory system
- blood is confined to vessels as it moves through the body
- Oxygen and nutrients move to various parts of the body through blood vessels
- Blood moves toward the anterior end (front) through the dorsal blood vessel, and it moves toward the posterior end (back) through the ventral blood vessel

Earthworm Feeding and Digestion

- Earthworms have a full digestive tract that runs through all of the segments from mouth to anus

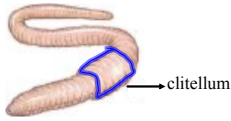
- Steps of digestion

1. food is taken in through the mouth
2. the food passes through the pharynx
3. next the food goes through the esophagus (located under the hearts)
3. the food moves from the pharynx to the crop
 sac where food is stored in the earthworm until it is ready to move on
4. the food moves from the crop to the gizzard
 a muscular sac that contains hard particles that help grind soil and food before they pass into the intestines
5. nutrients are absorbed from the food in the intestines
6. whatever is not absorbed by the earthworm, passes through the intestines and out of the earthworm through the anus



Earthworm Reproduction

- Earthworms can reproduce both sexually and asexually *Produce both sperm & eggs*
- Most annelids have male and female but earthworms are hermaphrodites
- Sperm are passed between two worms near segments called the clitellum



a thickened band of segments closer to the anterior end

- 2 Sperm Ducts are located near the anterior end of the worm
- 2 genital setae are located near the clitellum
- Sperm is produced in the seminal vesicles
cream colored structures used to produce sperm. They cover the digestive system
- Earthworms hatch from a cocoon
- Earthworms can also reproduce asexually by regeneration *↔*

