

# Chapter 12

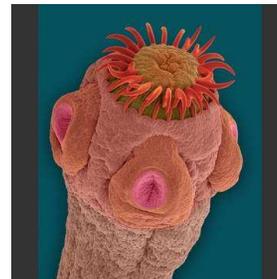
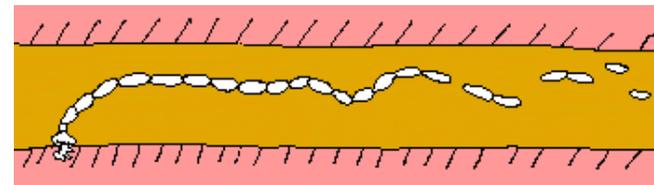
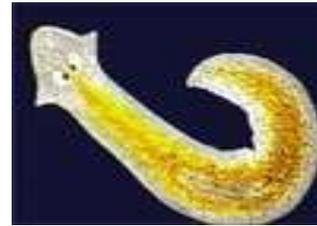
## Part 2

# The Worms

Platyhelminthes, Nematoda &  
Annelida

# Phylum: Platyhelminthes

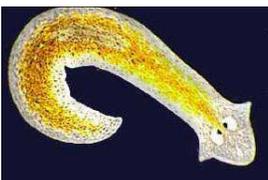
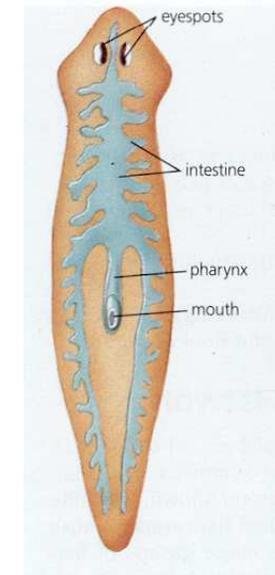
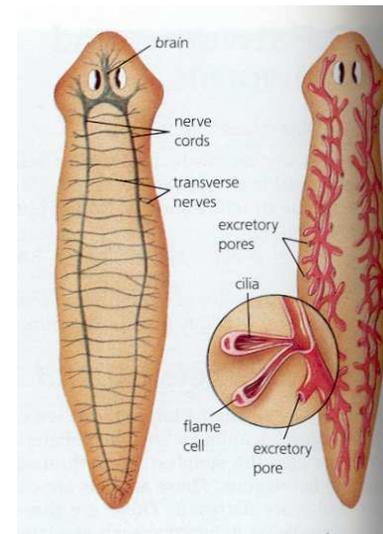
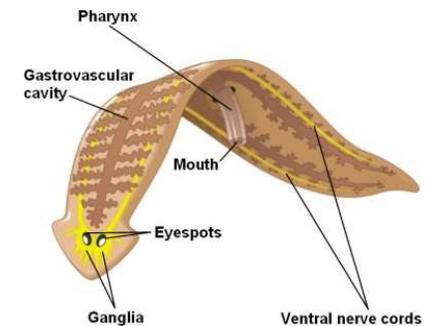
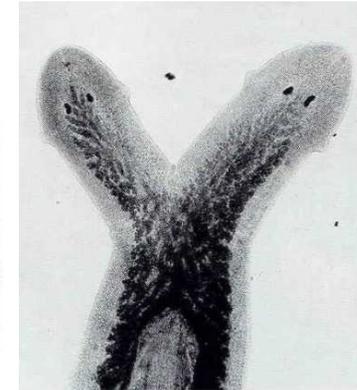
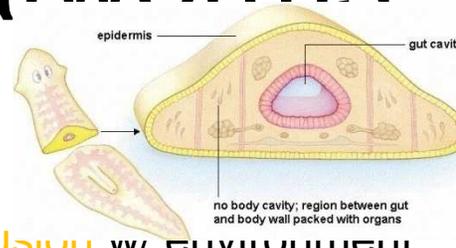
- Examples: Flatworms, *Planaria sp.*, tapeworms and blood flukes
- Acoelomate, Invertebrate, Simplest critter w/ bilateral symmetry
- Simplest critter w/ “cephalization” (distinct head region) (anterior) and tail (posterior) regions
- Most are aquatic
- Free living & parasitic lifestyles



# Flatworms

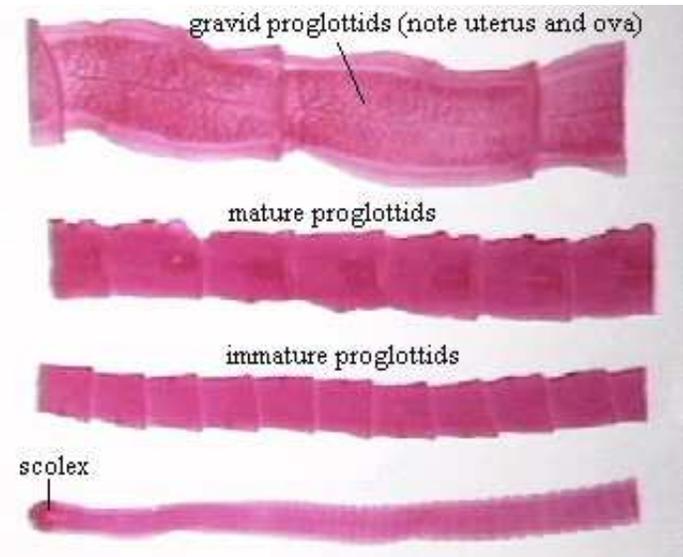
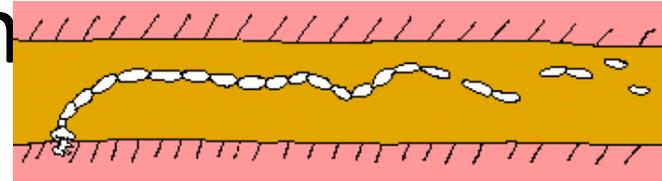
- Free Living Example - Planarians

- Dorsoventrally flattened
- Able to regenerate
- Circulatory & Respiratory – diffusion w/ environment
- Digestive system - Incomplete w/ mouth pharynx & Gastrovascular cavity (GVC) which consists of branching intestine
- Excretory System – flame cells & excretory pores
- Nervous System - Includes: anterior cerebral ganglia “brain”, longitudinal nerve cords, and some lateral nerves, light sensitive eye spots
- Muscular System – under epidermis, layer of circular & longitudinal muscles
- Reproduction –
  - Asexual – fission & regeneration
  - Sexual – hermaphroditic produce both eggs & sperm



# Flatworm

- Parasitic Examples – Tapeworms & Flukes
- Complex multi-host life cycles
- Can be over 30 feet long!
- Eggs/larvae found in uncooked fish & meats
- **No digestive system** – absorb nutrients directly from host intestines
- Structure

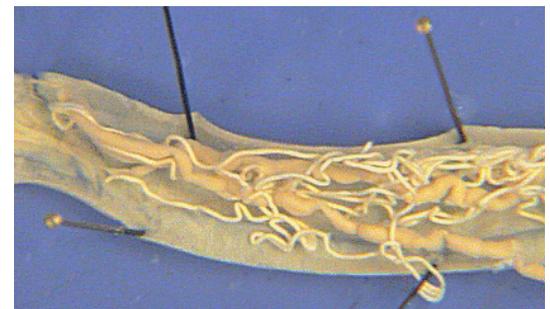
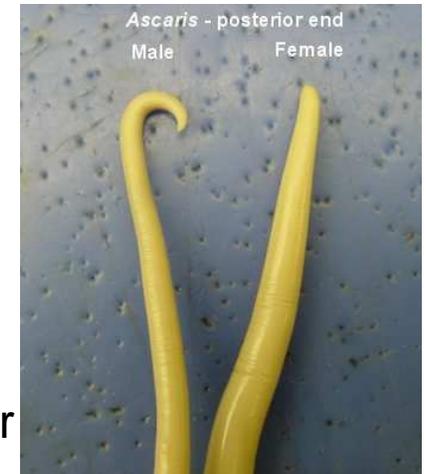
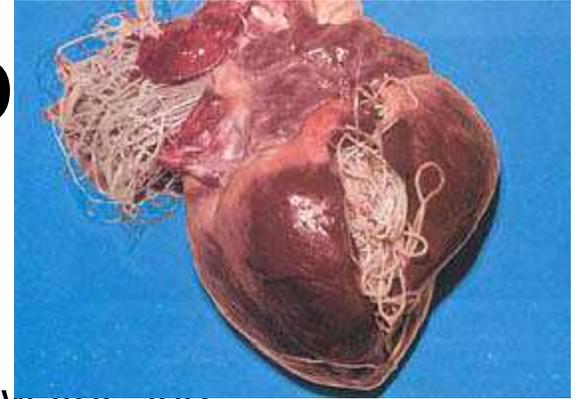


- **Scolex** - anterior head region w/ hooks & suckers used to attach to the host intestinal wall
- **Proglottids** - Extending from the neck is a series of proglottids; contain the sex organs; each mature proglottid release thousands of fertilized eggs into the host's digestive tract for elimination.



# Phylum Nematoda

- **Roundworms** – *Ascaris sp.*, hookworms, pinworms
- **Pseudocoelomates**,
- Bilateral symmetry
- Free living and parasitic: Aquatic- marine and freshwater and terrestrial
- May be the **most abundant animals** on earth.
- A bucket of soil can contain > 1 million roundworms!!
- **Simplest invertebrate with complete digestive system** ( 2 openings): **mouth** and **anus** present
- **Lack circulatory & respiratory systems**
- **Primitive excretory** cells excrete through pores
- Muscular system w/ only **longitudinal muscles** & no circular muscles cause worm to thrash back & forth. Require something to push against to move forward.
- Nervous system has main ventral nerve cord
- Reproduce sexually, first animals we have studied w/ **separate male & female** animals.



# Phylum Annelida:

- **Segmented worms**- earthworms, leeches, bloodworms, sandworms, polychaete worms
- **Bilateral symmetry**
- **Coelomate** – first animal we've studied w/ a true coelom
- Invertebrate, aquatic (freshwater & marine) & terrestrial
- From < 1mm to over 10 feet long
- Free living & parasitic
- Medical use of leeches – anticoagulant secreted after sucker attaches stops blood from clotting.

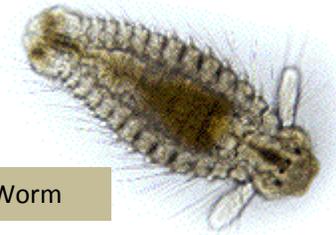


# Annelids – Segmented Worms

- **Digestion:** **Complete** system: Mouth, pharynx, esophagus, crop, gizzard, stomach, intestine, anus (ding-a-ling!)
- **Respiration:** Aquatic annelids typically breath through **gills**, whereas terrestrial annelids **diffusion** O<sub>2</sub> and CO<sub>2</sub> thru the skin
- **Internal Transport** – The Circulation: First critter w/ true circulatory system. **Closed circulation** w/ dorsal & ventral blood vessels connected at each segment w/ smaller vessels called “ring vessels”. Has 5 pairs of enlarged ring vessels called “**Aortic Arches**” which act as hearts to pump the blood.
- **Excretory system:** Nitrogenous wastes from cellular activities excreted thru use of **nephridia**, (small tubular structures located in each metamere).
- **Nervous system** is well developed w/ organized **dorsal brain** extending ventrally to a **ventral nerve cord** which connects small nerves from each segment (metamere)
- **Movement** – muscles in the annelid are of two types longitudinal and circular
- **Reproduction** – most reproduce sexually, some w/ separate sexes and some species have individuals w/ both male and female organs in the same animal – **hermaphroditic**.

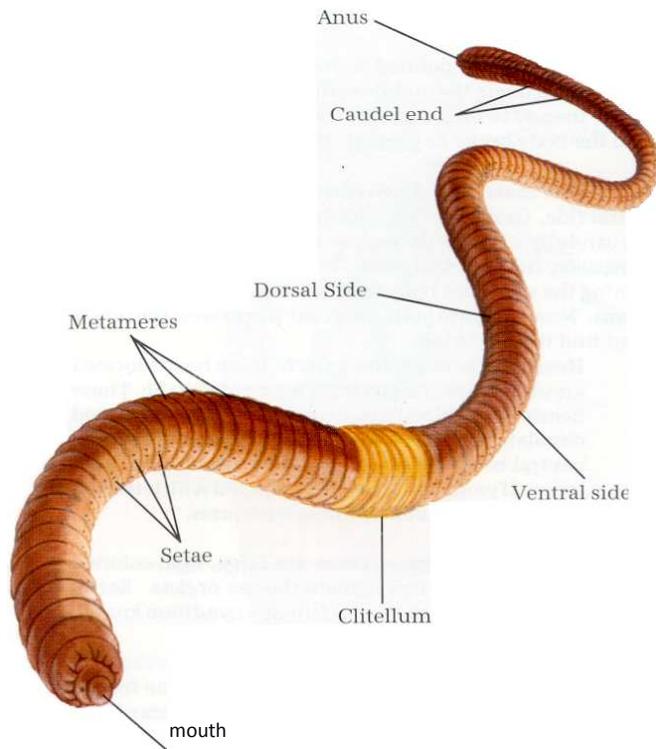
# External Anatomy

- 1. **Mouth** – ingest food and materials into digestive system
- 2. **Anus** – Undigested food and wastes leave the body
- 3. **Metamere** – Segments of the earthworm
- 4. **Setae** – bristles found on ventral surface
- 5. **Clitellum** – secretes mucus and egg sacs



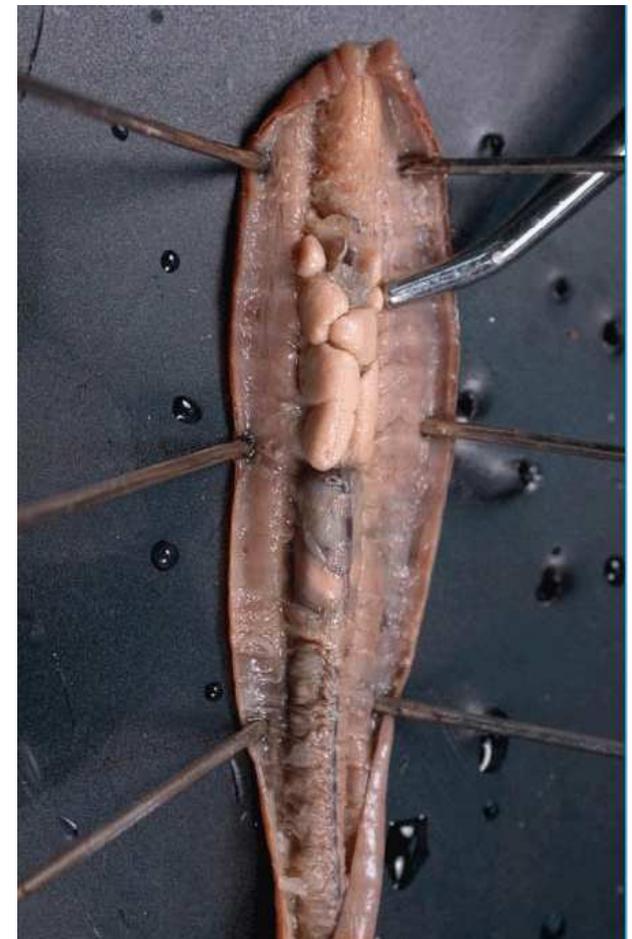
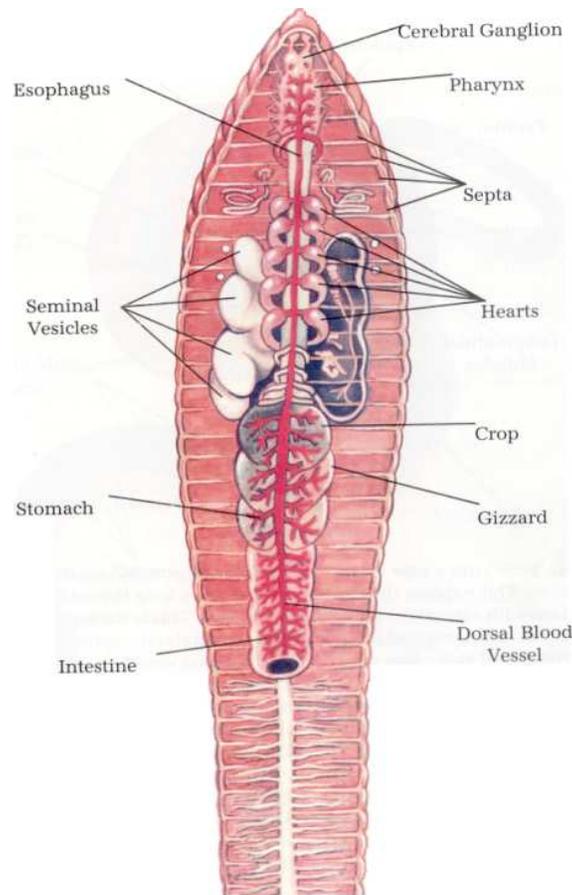
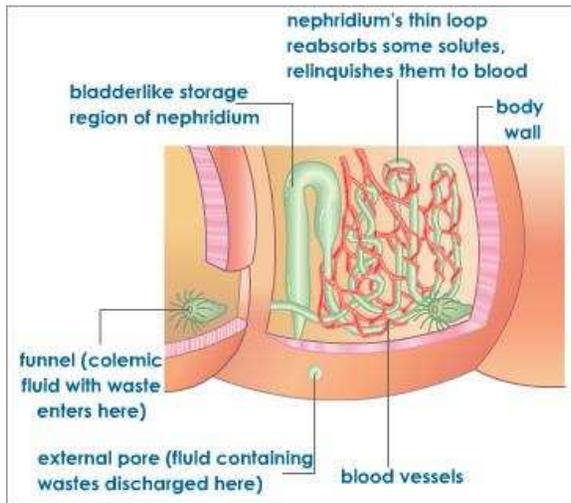
Polycheate Worm

**Distinct dorsal (dark colored) & ventral (light colored) areas**

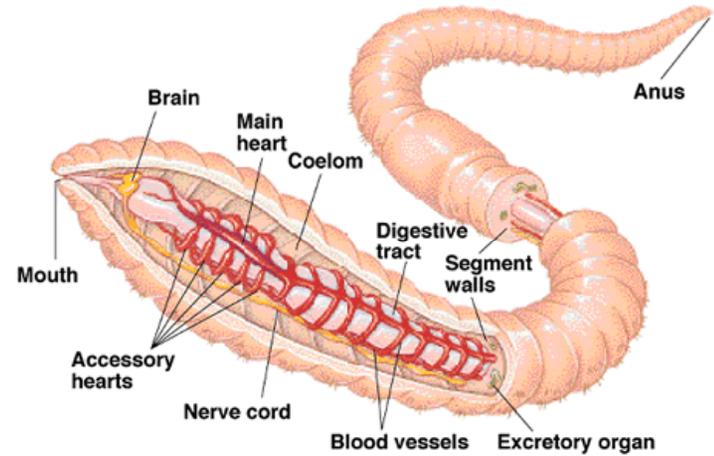
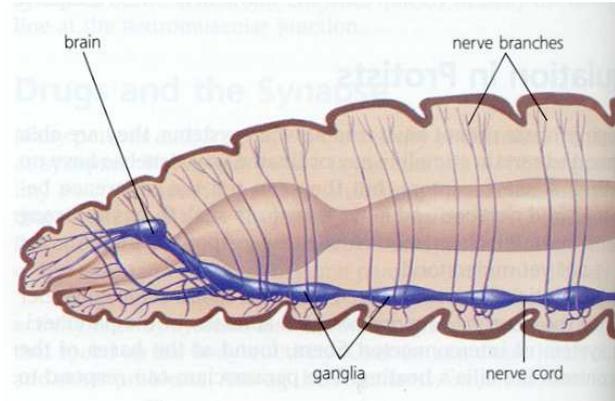
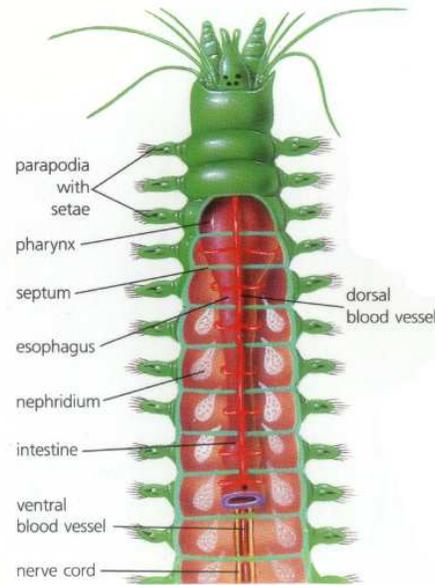


# Internal Structures and Function

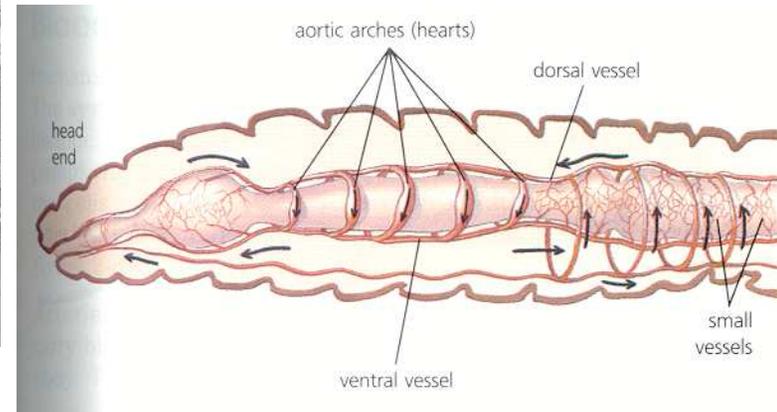
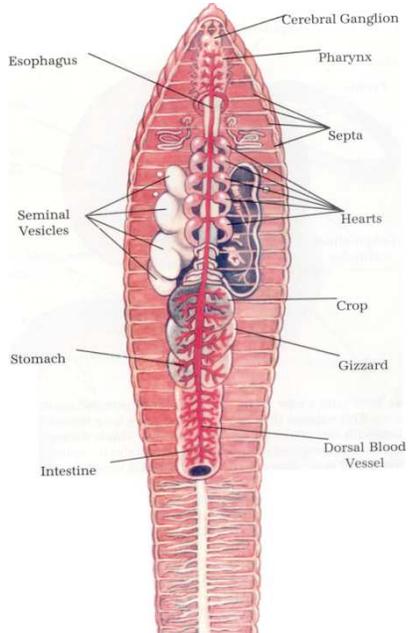
- 1. Mouth (entrance)
- 2. Pharynx (grabs food & pulls in)
- 3. Esophagus (passage way)
- 4. Crop (stores food)
- 5. Gizzard (grinds)
- 6. Stomach (digests)
- 7. Seminal Vesicles
- 8. Intestine (digests)
- 9. Anus (eliminates)
- 10. Ventral Nerve Cord
- 11. 5 pairs)Aortic Arches (hearts)
- 12. Cerebral Ganglia (brain)
- 13. Dorsal blood vessel (vein)
- 14. Ventral Blood vessel (artery)
- 15. Septa “snare drum” tissue between metameres



# More worm diagrams



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All done

w/

this worm stuff