Earthworm Anatomy

**External Anatomy**

Examine your earthworm and determine the dorsal and ventral sides. Locate the clitellum which is on the anterior end of the worm. 

Locate the mouth of the worm on the far anterior end of the worm 


The openings toward the anterior of the worm are the **sperm ducts** 
The openings near the clitellum are the **genital setae**.

Label them on the worm pictured to the right. 

Locate the dark line that runs down the dorsal side of the worm, this is the **dorsal blood vessel**. The **ventral blood vessel** can be seen on the underside of the worm, though it is usually not as dark. 

Label the earthworm pictured:

A\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ B \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ D \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Internal Anatomy**

1.  Place the specimen in the dissecting pan **DORSAL** side up. 

2.  Locate the clitellum and insert the tip of the scissors about 3 cm posterior (behind the clitellum). 

3.  Cut carefully all the way up to the head.  Try to keep the scissors pointed up, and only cut through the skin. 

4.  Spread the skin of the worm out, use a teasing needle to gently tear the **septa** (little thread like structures that hold the skin to organs below it) 

5.  Place pins in the skin to hold it apart, angle the pins out so that they are not in your way. 

**Reproductive System**

The first structures you probably see are the **seminal vesicles**.  They are cream colored and located toward the anterior of the worm.  These are used for producing sperm.  Use tweezers to remove these white structures from over the top of the digestive system that lies underneath it. 

**Circulatory system**

The **dorsal blood vessel** **(X)** appears as a dark brownish-red vessel running along the intestine.  The **heart or aortic arches (Y)** can be found over the esophagus (just posterior to the pharynx).  Carefully tease away the tissues to expose the arches of the heart, the run across the worm. How many aortic arches can you count? \_\_\_\_\_\_ 

The **ventral blood vessel (Z)** is opposite the dorsal blood vessel, and cannot be seen at this time because the digestive system covers it.

Label the diagram (use the letters next to the bold words above) 



Does the earthworm have a closed or open circulatory system? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Digestive System**

The digestive system starts at the mouth.  You will trace the organs all the way to the anus and identify each on the worm.

Place in the correct order (number)

\_\_\_\_ Anus
\_\_\_\_ Crop
\_\_\_\_ Mouth
\_\_\_\_ Gizzard
\_\_\_\_ Esophagus
\_\_\_\_ Intestine
\_\_\_\_ Pharynx

Find the mouth opening, the first part after the mouth is the pharynx, you will see stringy things attached to either side of the pharynx (pharyngeal muscles) .   The esophagus leads from the pharynx but you probably won’t be able to see it, since it lies underneath the heart .
You will find a two structures close to the clitellum.  First in the order is the crop , followed by the gizzard .
The gizzard leads to the intestine  which is as long as the worm and ends at the anus .

\*Use your scissors to cut open the crop and the gizzard.  Which one has the harder exterior? \_\_\_\_\_\_\_\_\_\_\_

**Nervous System**

Locate the brain at the far anterior region of the worm. It is very tiny and whitish colored. If you can't find it, it is probably because it was destroyed when you cut the worm. You CAN locate the ventral nerve cord by removing the intestines and searching for a white string-like structure that runs the length of the worm and attaches to the brain.

Remove the intestines and locate the ventral nerve cord. 

**Lab Analysis**

(Answer True of False; most of the answers can be found in this worksheet)

1. \_\_\_\_ The brain attaches to the ventral nerve cord.
2. \_\_\_\_ The dorsal side of the worm is lighter than the ventral side..
3. \_\_\_\_ The clitellum is located toward the anterior end of the worm.
4. \_\_\_\_ The esophagus lies beneath the pharynx
5. \_\_\_\_ Earthworms are hermaphrodites.
6. \_\_\_\_ The ventral nerve cord and the ventral blood vessel are connected.
7. \_\_\_\_ The pale string-like structure running the length of the ventral side of the worm is the blood vessel.
8. \_\_\_\_ An earthworm has fourteen aortic arches.
9. \_\_\_\_ The dorsal blood vessel can be seen from the worm's exterior.
10. \_\_\_\_ Serminal vesicles are part of the worm's digestive system.
11. Label these structures on the image: pharynx, esophagus, crop, gizzard, aortic arches, brain, dorsal blood vessel