

Earthworm Anatomy

Name: _____

External Anatomy

Examine your earthworm and determine the dorsal and ventral sides. Locate the two openings on the ventral surface of the earthworm

The openings toward the anterior of the worm are the sperm ducts

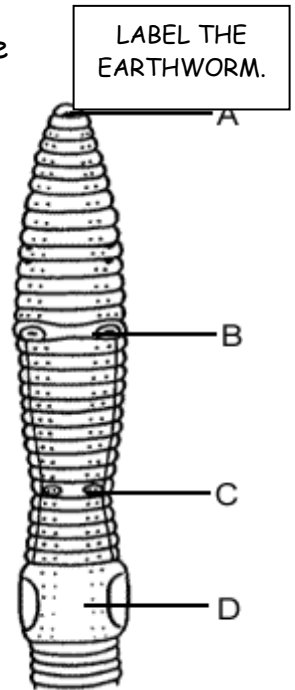
The openings near the clitellum are the genital setae.

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 usually not as dark.

Locate the worm's mouth and anus.

Note the swelling of the earthworm near its anterior side - this is the clitellum. Label the earthworm pictured.

A _____ B _____
C _____ D _____

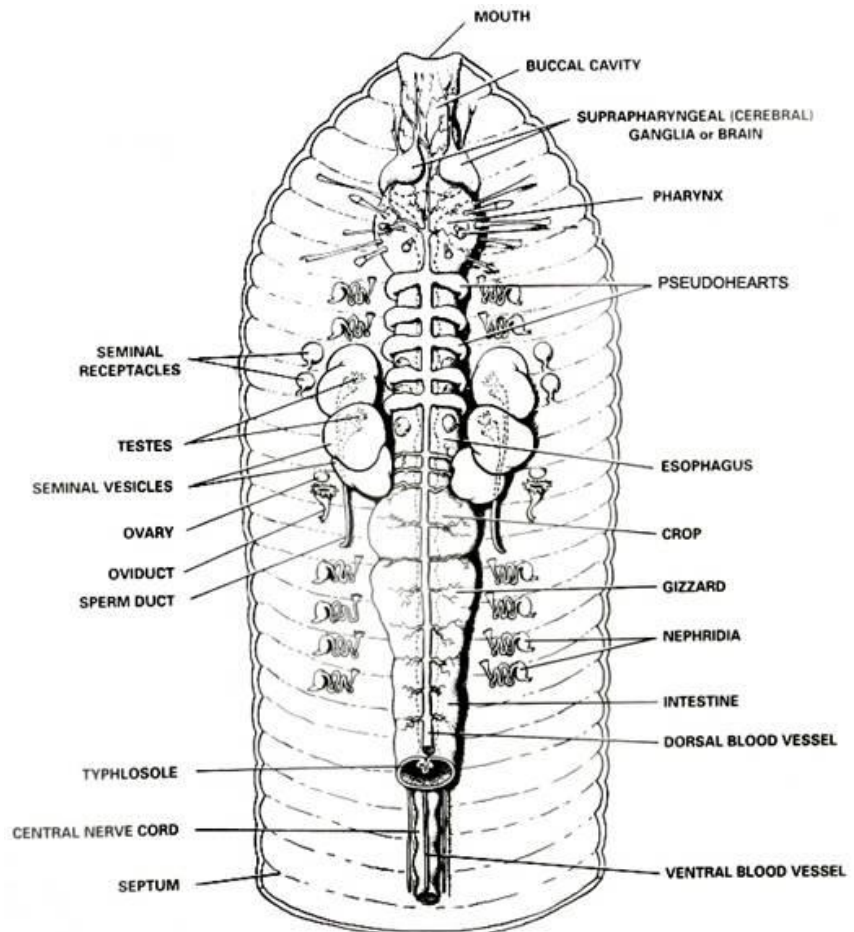


Internal Anatomy

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 posteriorly.
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 - set them at an angle so they aren't in the way of your view.

Reproductive System

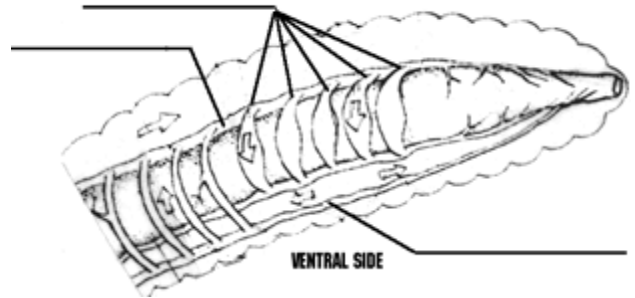
The first structures you probably see are the seminal vesicles. They are cream colored and located toward the anterior of the worm. These are used for producing sperm. Use tweezers to remove these white structures from over the top of the digestive system that lies underneath it.



Circulatory system

The dorsal blood vessel appears as a dark brownish-red vessel running along the intestine. The heart (or aortic arches) can be found over the esophagus (just posterior to the pharynx). Carefully tease away the tissues to expose the arches of the heart. If you are careful enough, you can expose all 5 of them. How many aortic arches can you count?

CIRCULATORY SYSTEM



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

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. 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 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? _____

► Place in the correct order (number)

- _____ Anus
- _____ Crop
- _____ Mouth
- _____ Gizzard
- _____ Esophagus
- _____ Intestine
- _____ Pharynx

Describe the functions of each of the organs and label them on the drawing. (The words are listed for you)

Crop

Mouth

Pharynx

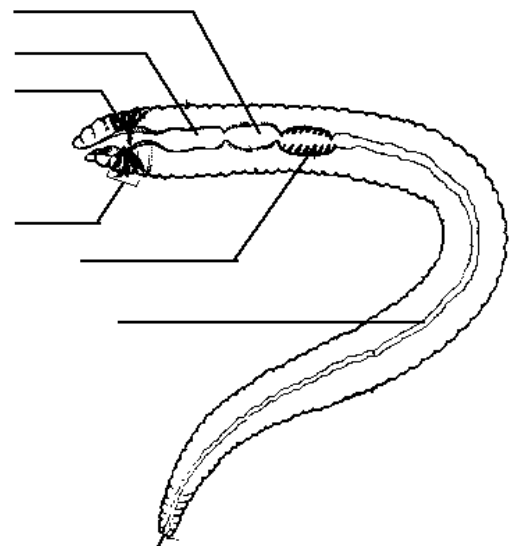
Intestine

Gizzard

Anus

Esophagus

Pharyngeal Muscles



Nervous System

Locate the brain in the far anterior region of the worm. It is very 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 the white string-like structure that runs the length of the worm.

Remove the intestine and locate the ventral nerve cord.

Lab Analysis (answer True or False)

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. ____ Seminal vesicles are part of the worm's digestive system.

Questions:

1. Earthworms are hermaphrodites. What does this mean?

2. Do earthworms fertilize their own eggs? Explain your answer.

3. Do earthworms have a closed or open circulatory system? Explain your answer.

4. Why is an earthworm in the phylum Annelida?

5. What helps an earthworm dig and move through soil and where is this located?

6. How does an earthworm breathe?

7. What was the most amazing thing you learned about earthworms in this lab?

Label the following earthworm diagram. Color code the organ systems for the earthworm using the following key:

Circulatory System - Red

Reproductive System - Blue

Digestive System - Green

Nervous System - Yellow

