

# EARTHWORM DISSECTION

## BACKGROUND INFORMATION

Earthworms (*Lumbricus terrestris*) are representative animals of the Phylum Annelida (annelus - ring). An earthworm is very well **ADAPTED** to a life of burrowing through the soil. Its streamlined shape and outer coating of mucus allow it to easily pass through the soil.

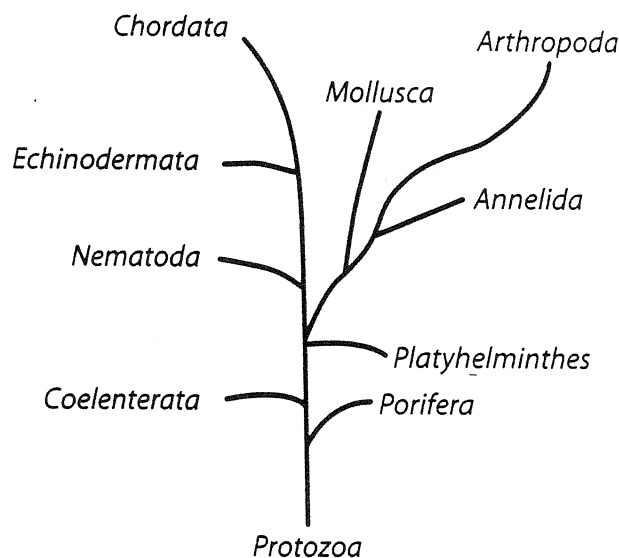
Believe it or not, earthworms and humans (*Homo sapien*) share a common ancestry. Since earthworms and humans have a common ancestry, we must also have some shared characteristics.

**REMEMBER:** shared characteristics = shared phenotype = shared genotype = shared ancestry.

So why dissect an earthworm? Why don't we just dissect a human? Well, if you really want to dissect a human being then go to medical school. However, since this isn't medical school, and you guys aren't doctors.....yet, we can learn a lot about humans by studying an earthworm because earthworms and humans have some *things* in common.

Some of the major characteristics earthworms and humans have in common include:

- (1) a one-way digestive tract with *specialized* organs.
- (2) a *closed* circulatory system carrying blood containing hemoglobin



## OBJECTIVES:

*In this investigation, you will learn to:*

- (1) identify dissection instruments.
- (2) safely and properly use dissection instrument.
- (3) identify the structure and function of various earthworm organs.
- (4) state the similarities and differences between the structure and function of organs and organ system common to both the earthworm and human.

## MATERIALS:

- preserved earthworm
- dissecting kit
- dissecting pan
- dissecting pins

**CAUTION:** During this lab activity, you **MUST** follow **ALL** directions as written and as instructed by the teacher. Failure to do so can result in injury and **WILL NOT BE TOLERATED!**

## METHOD:

- (1) Identify the **ANTERIOR** (head), **POSTERIOR** (tail), **DORSAL** (back) and **VENTRAL** (front) sides of your earthworm.

A band-like reproductive structure called a **CLITELLUM** separates the worm into two unequal lengths. The shorter section (about 1/4 the total body length) is the *anterior* end. Tiny bristles called **SETAE** which aid the earthworm in locomotion by gripping the soil are located on the *ventral* side of the worm. The smooth side is the *dorsal* side.

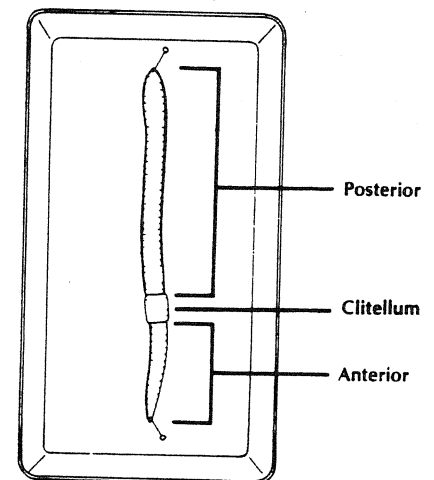
The *dorsal* surface is darker than the *ventral* surface and is rounded while the ventral side is flat. Also, the dorsal blood vessel, a dark line that runs along the midline of the dorsal surface. See **Figure 1**.

- (2) Stretch the earthworm out in the dissecting pan **DORSAL** side or smooth side up.
- (3) Pin the earthworm to the pan with dissecting pins. Use one pin in each end of the earthworm as in **Figure 1**.

**THE EARTHWORM MUST BE TIGHTLY HELD-IN PLACE .**

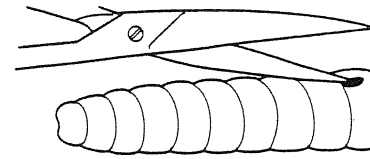
Otherwise, it will be hard to make you initial incision.

**Figure 1.**



- (4) Starting at the *posterior* side of the clitellum, using the *scalpel*, **CAREFULLY** make an initial incision through the skin and muscle wall of the earthworm. After the initial incision is made, use *scissors* to continue to cut through the skin and muscle wall in a posterior direction towards the anus. See **Figure 2**.

**Figure 2**

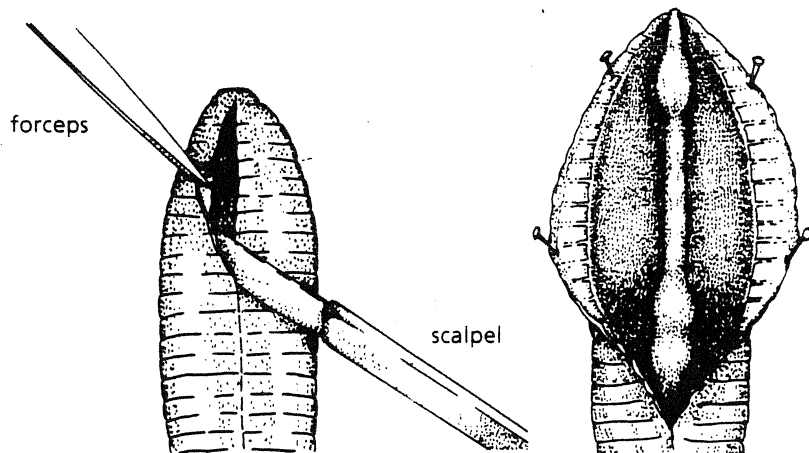
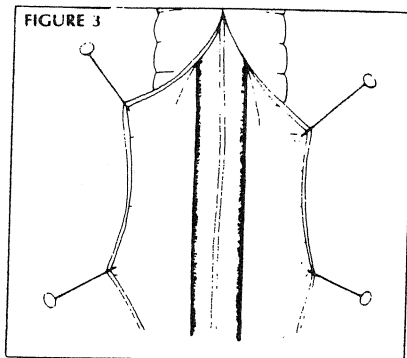


**CAUTION:**

- When using scissors, cut in a direction **AWAY** from your body to avoid cutting yourself!
- An earthworm's skin and muscles are **VERY THIN**. A **SHALLOW** cut is all that is needed!

- (5) Spread the edges of the earthworm apart by **CAREFULLY** cutting through the thin membranes called *SEPTA* located on the inside of the earthworm. The *SEPTA* separate the earthworm into each of its segments or "rings". Pin the skin and muscle to the dissecting pan as you spread it apart. See **Figure 3**.

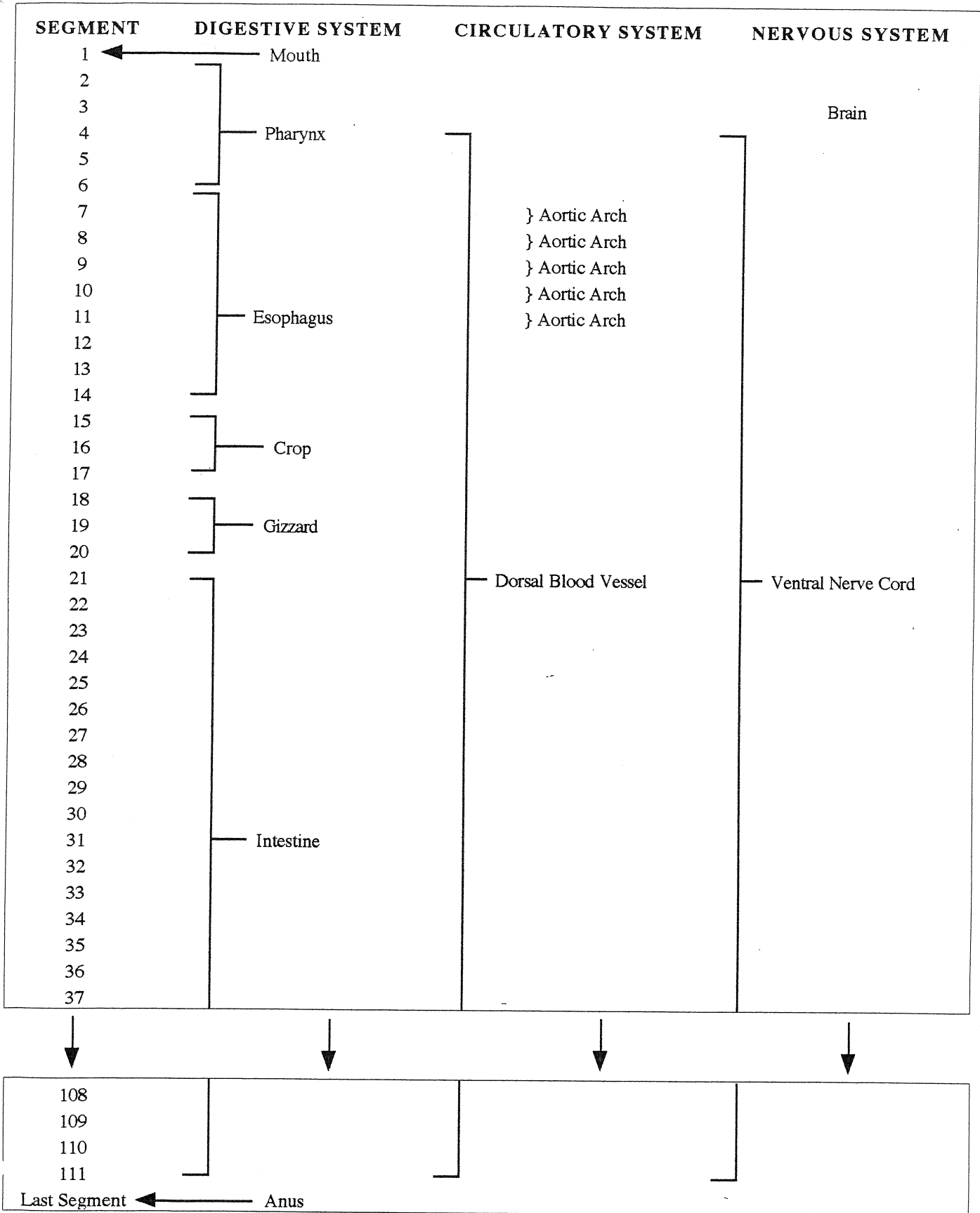
**Figure 3.**



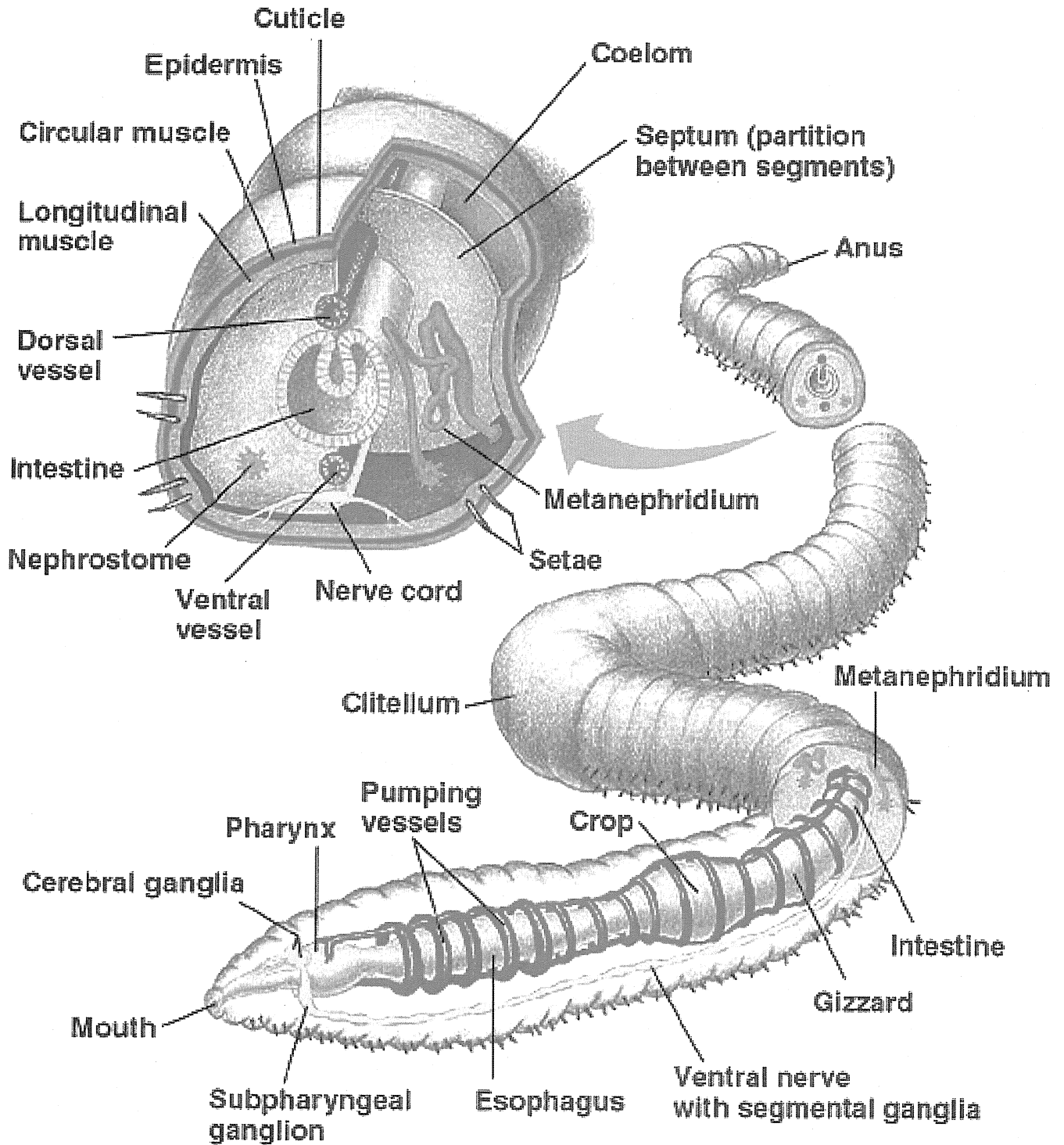
- (6) Return to your original incision site, and now continue to **CAREFULLY** cut and pin your specimen, this time heading toward the *anterior* end of the earthworm.

**CAUTION:** The **MAJOR** internal organs of the earthworm are located in this section. Be **VERY CAREFUL** when cutting through this section.

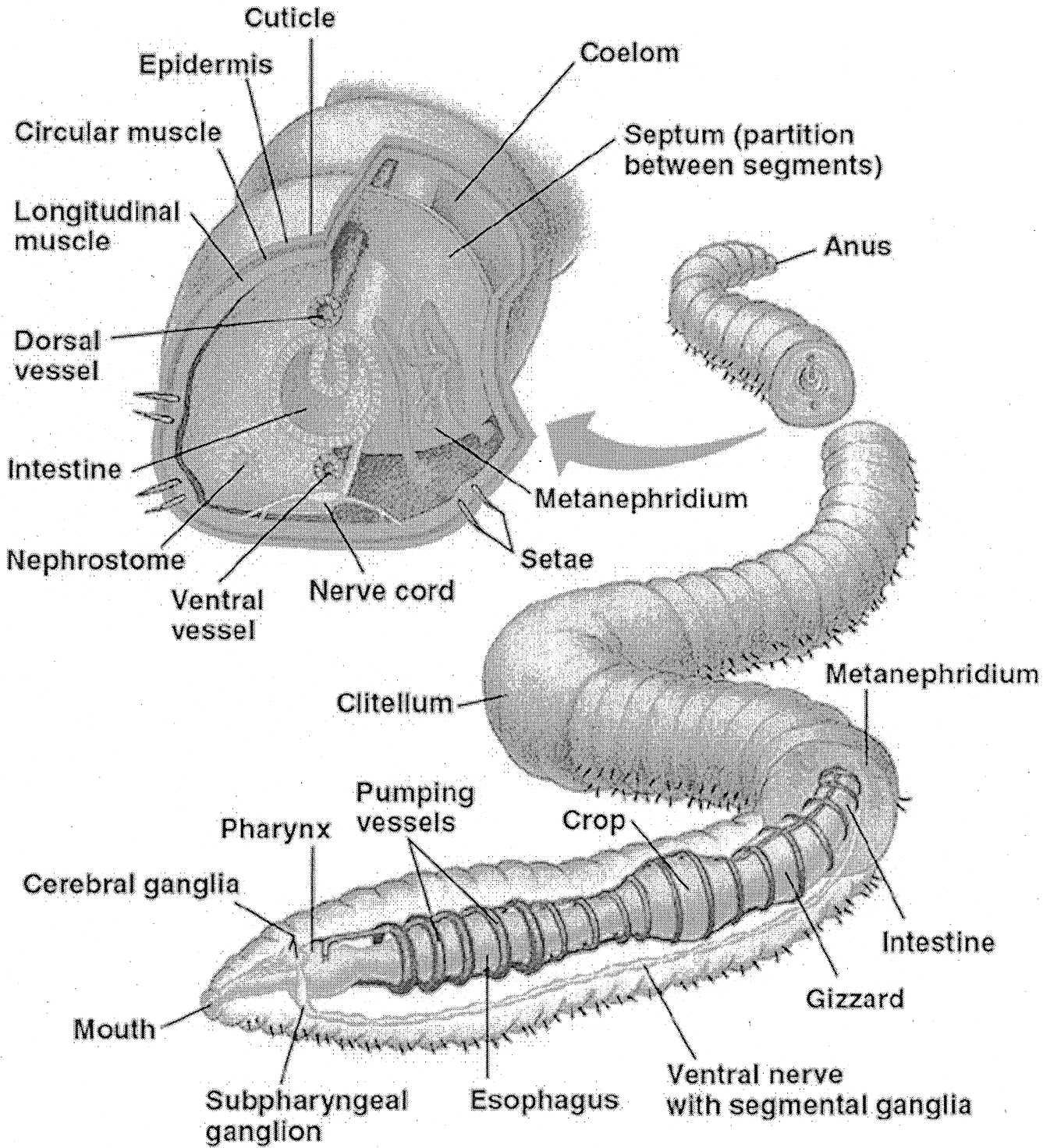
(7) After you have completely opened your earthworm, identify the internal organs by using the earthworm "map" of organs below.



# Earthworm Anatomy



# Earthworm Anatomy



# The Human Digestive System

