Pre-lab Discussion: The earthworm belongs to a group of animals called annelids (segmented worms). The body of an annelid is usually divided internally and externally into well-defined segments, which may be separated from each other by membranous partitions. Except for the tail and head regions, all segments are essentially alike. Other members of this group include the clam worms and tube worms, which live in the ocean, and the leeches. The earthworm hunts food at night and thus has been called a "night crawler." It usually extends its body from the surface opening of a small tunnel, which it makes by "eating" its way through the soil. The rear end of the worm's body remains near the opening while the head end forages for decaying leaves and animal debris. It has been estimated that an acre of good soil contains over 50,000 earthworms. By their continuous foraging and tunneling these worms turn over 18 to 20 tons of soil per acre and bring over one inch of rich soil to the surface every four to five years. Thus, indirectly, the earthworm enriches farmland and provides for more food in a rapidly expanding population.

Pre-Lab Questions:
1. Please fill in the following classification information on Earthworm (*Lumbricus terrestris*). (you may use http://www.itis.gov/index.html)
   
   a. Kingdom:
   b. Phylum:
   c. Class:
   d. Order:
   e. Family:
   f. Genus:
   g. Species:

2. What does an earthworm eat?

3. Annelids are the simplest organism to have a true coelom. What is a coelom?

4. Define the following terms (use dictionary)
   
   a. Dorsal:
   b. Ventral:
Purpose: To observe the structures of male and female *Lumbricus terrestris*.

Materials:
One specimen of *Lumbricus terrestris*
Rubber gloves
Dissection kit
Dissection tray
Pins

Earthworm Dissection Lab

Safety: Put on a laboratory coat if desired. Make sure you handle all specimens with rubber gloves. Handle all dissection equipment carefully. Clean all equipment when finished. *Lumbricus terrestris* requires no special safety measures.

Procedure:

1. The body of the earthworm is comprised of over 100 segments. Each segment looks like a ring. The segments are numbered in sequence from the anterior end. Numbers in the diagrams refer to the segment number.

2. Pin worm to dissecting pan. Using a scalpel or scissors, make a shallow incision in the dorsal side of the clitellum at segment 33. CAUTION: Scalpels and scissors are very sharp. Report any cuts to your instructor. Using the forceps and scalpel, spread the incision open, little by little. Separate each septum from the central tube using a dissecting needle, and pin down each loosened bit of skin. In order to see the pharynx and ganglion (brain), you must open the worm all the way to segment 1.

3. Use the figure 3 below to locate and identify the five pairs of aortic arches, or hearts. Then find the median dorsal vessel. Look for smaller blood vessels that branch from the dorsal blood vessel.

![Diagram of an earthworm with labeled parts including segment, septum, female genital pore, sperm groove, clitellum, and other structures.](image)

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*Prostomium* | *Male genital pore* | *Sperm groove* | *Clitellum* | *Female genital pore* | *Segmentation* | *Setae* | *Openings of seminal receptacles*
gizzard, and intestine. To find organs of the nervous system, carefully push aside the digestive and circulatory system organs. Use figure 3 to locate the ventral nerve cord. Trace the nerve cord forward to the nerve collar, which circles the pharynx. Locate the cerebral ganglion under the pharynx. The ganglia above the pharynx serve as the brain of the earthworm.

5. Wrap the worm and all its parts in a paper towel. Place the worm in the designated garbage can.

6. Clean up your work area and wash your hands before leaving the lab.
Post Lab Questions:
1. Describe two ways in which an earthworm’s body is adapted to life in the soil.

2. Explain how an earthworm demonstrates cephalization.

3. What are some ways that annelids are beneficial?