Life Sciences 11 Annelida Lab Name:

**Purpose:** to compare and contrast the various body plans of annelids

**Materials:**

1. preserved earthworm
2. hand lens
3. dissection tray
4. dissecting pins, forceps, scissors, scalpel, probe
5. gloves
6. microscope and Leech, Earthworm CS and nephridium slides

**Method:**

Part 1: Earthworm (Oligochaeta*)* Dissection

1. Place earthworm in the dissecting tray & rinse off the excess preservative. Identify the dorsal side, which is the worm’s rounded top, and the ventral side, which is its flattened bottom. Turn the worm ventral side up, as shown in the diagram below.



1. Use a hand lens as you observe all parts of the worm, externally and internally. Find the anterior end by locating the prostomium, which is a fleshy lobe that extends over the mouth. The other end of the worm’s body is the posterior end, where the anus is located.
2. Locate the clitellum, which extends from segment 33 to segment 37. Look for the worm’s setae, which are the minute bristle-like spines located on every segment except the first and last one.
3. Refer again to the diagram of the ventral view of the worm to locate and identify the external parts of its reproductive system. Find the pair of sperm grooves that extend from the clitellum to about segment 15, where one pair of male genital pores is located. Look also for one pair of female genital pores on segment 14. There is another pair of male genital pores on about segment 26. Try to find the two pairs of openings of the seminal receptacles on segment 10. Note: These openings are not easy to see.
4. Turn the worm dorsal side up. Using a scalpel and 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 teacher. 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. Continue the incision forward to segment 1.
5. Use the diagram below to locate and identify the five pairs of aortic arches, or hearts. Then find the dorsal blood vessel. Look for smaller blood vessels that branch from the dorsal blood vessel.



1. Locate the digestive tract, which lies below the dorsal blood vessel. Refer to the diagram above to locate the pharynx, esophagus, crop, gizzard, and intestine.
2. To find organs of the nervous system, push aside the digestive and circulatory system organs. Use the diagram below to locate the ventral nerve cord. Trace the nerve cord forward to the nerve collar, which circles the pharynx. Find one pair of ganglia under the pharynx and another pair of ganglia above the pharynx. The ganglia above the pharynx serve as the brain of the earthworm.
3. The worm’s excretory organs are tiny nephridia. There are two in every segment. Use the preceding diagram to locate some nephridia.
4. Use the diagram below to locate and identify a pair of ovaries in segment 13. Look for two pairs of tiny testes in segments 10 and 11. To find these organs, you will again have to push aside some parts already dissected.



1. Dispose of your materials according to the directions from your teacher.
2. Clean up your work area and wash your hands before leaving the lab.

Part 2: Other worms

1. Use the microscopes set up around the room to do a drawing of:
   1. the cross-section through an earthworm. Be sure to label as many germ layers as you can
   2. the earthworm nephridium (look at this slide, but don't do a drawing).
   3. the leech (Hirudinea) – label as many structures as you can
2. Look at the sandworm (Polychaeta) specimen. Draw a segment showing the parapodia.

**Analysis:**

1. What is the name of the pumping organs of an earthworm?
2. In the earthworm, trace the parts of the digestive tract through which food passes.
3. Which of the parts of the earthworm’s body that you saw are included in the excretory system?
4. Among the earthworm’s structural adaptations are its setae. How do you think the earthworm’s setae make it well adapted to its habitat?
5. How is the earthworm’s digestive system adapted for extracting relatively small amounts of food from large amounts of ingested soil?
6. What did each germ layer develop into in the earthworm?
7. What is the function of the nephridium? How does it complete this function?
8. How is the sandworm similar and different to the earthworm?
9. How is the leech designed to live as an ectoparasite? What are the similarities and differences between the leech and the earthworm?