Name: _____ Date: _____

Life Science Period: _____

Invertebrates – *Worms*

Lab: Earthworm Dissection

Viewing the external and internal anatomy of an invertebrate

Background

Among the most familiar invertebrate animals are the earthworms, members of the phylum Annelida. The word annelida means "ringed" and refers to a series of rings or segments that make up the bodies of the members of this phylum.

Internally, septa, or dividing walls, are located between the segments. External segments are called metameres. There may be more than 100 segments in an adult worm. The **clitellum** is a swelling of the body found in sexually mature worms and is active in the formation of an egg capsule, or cocoon. Eggs are produced in the ovaries and pass out of the body through female genital pores. Sperm are produced in the testes and pass out through tiny male genital pores. During mating, sperm from one worm travel along the sperm grooves to the seminal receptacles of another worm. Fertilization of the eggs takes place outside the body as the cocoon moves forward over the body, picking up the eggs of one worm and the sperm of its mate.

The pumping organs of the circulatory system are **five aortic arches**. Circulatory fluids travel from the arches through the ventral blood vessel to capillary beds in the body. The fluids then collect in the dorsal blood vessel and reenter the aortic arches.

The earthworm takes in a mixture of soil and organic matter through its mouth, which is the beginning of the digestive system. The mixture enters the **pharynx**, which is located in segments 1–6. The **esophagus**, in segments 6–13, acts as a passageway between the pharynx and the crop. The **crop** stores food temporarily. The mixture that the earthworm ingests is ground up in the **gizzard**. In the **intestine**, which extends over two-thirds of the body length, digestion and absorption take place. Soil particles and undigested organic matter pass out of the worm through the rectum and **anus**.

The nervous system consists of the **ventral nerve cord**, which travels the length of the worm on the ventral side, and a series of ganglia, which are masses of tissue containing many nerve cells. The nerve collar surrounds the pharynx and consists of ganglia above and below the pharynx. Nervous impulses are responsible for movement and responses to stimuli. Each segment contains an enlargement, or ganglion, along the ventral nerve cord.

Excretory functions are carried on by nephridia, which are found in pairs in each body segment. They appear as tiny white fibers on the dorsal body wall. The earthworm has no gills or lungs. Gases are exchanged between the circulatory system and the environment through the moist skin.

Pre-Lab Questions

Answer the following questions **after** reading both the background information and reviewing the dissection procedures. **Failure to complete all questions will result in exclusion from the laboratory activity.**

1. To which phylum does your invertebrate specimen belong?

   _____

2. What is the clitellum, and what is its function?

   _____

   _____

3. Which of the body systems mentioned in the background information will you be examining during your dissection?

   _____

4. What **data** will you collect during your laboratory investigation?

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5. Why do you have to be very careful while cutting through the skin of the earthworm? *(Hint: it's not about you, it's about your specimen!)*

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