Name: _____ Homeroom: _____

Intro to Worms

All worms have some characteristics in common. All worms are invertebrates, and they all have long, narrow bodies without legs. In addition, all worms have tissues, organs, and organ systems. Worms are the simplest organisms with a brain. In worms, the brain consists of a knot of nerve tissue located in the head end. Also, all worms have bilateral symmetry. Unlike sponges or cnidarians, worms have a head and a tail end.

Flatworms

As you'd expect from their name, flatworms are flat. Most flatworms are parasites that obtain their food from their hosts. Because flatworms, like cnidarians, have a digestive system with only one opening, undigested food is expelled through the mouth. Tapeworms are one kind of parasitic flatworm. Planarians are an example of nonparasitic, or free-living, flatworms.

Reproduction
Generally all flatworms are hermaphroditic, meaning an individual flatworm has both male and female reproductive components. They engage in sexual and asexual reproduction, with the dominant mode of reproduction varying among species.

Asexually, flatworms procreate via fragmentation and budding. Fragmentation, also called cloning, occurs when a flatworm splits off a part of its body, allowing the separated portion to regenerate into a new worm. With budding, a flatworm grows an extension from its body. This extension, or bud, becomes a new worm and separates from the original flatworm.

There are also multiple methods of flatworm sexual reproduction. Because a flatworm is hermaphroditic, it can produce eggs within its body and also fertilize them with sperm, also generated in its body. Another method of reproduction involves physical contact between two flatworms, where the sperm of one flatworm is absorbed into the skin of another. With some species, this occurs through penis fencing, where flatworms use their penis to compete in trying to pierce the skin of a potential mother.

Ultimately, fertilized eggs are encased in a cocoon within a flatworm's body. The cocoon is released into environments such as amid water weeds. The cocoon nourishes the eggs, which develop and later hatch.

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Roundworms

Unlike flatworms, roundworms have cylindrical bodies and a digestive system that is like a tube, open at both ends. Food enters at the animal's mouth and wastes exit through an opening, called the anus, at the far end of the tube. Food travels in one direction through the roundworm's digestive system, as it does in most complex animals.

The roundworm is a parasite that relies on animals and plants to survive, without providing any benefit back to their hosts. The roundworm reproduces sexually, meaning that it takes both a female and a male roundworm to produce offspring. Once fertilized, a single roundworm can lay as many as 200,000 eggs in a single day.

Female
The female roundworm carries the typical duties of female species that produce sexually. The female roundworm has a single ovary, and holds its eggs in an oviduct. The female can then pass the eggs through the oviduct and into the uterus where the eggs can be fertilized.

Male
The male roundworm also displays typical duties of males species that produce sexually. The male has two important pieces of anatomy that help in reproduction, the spicules and cloaca. When mating, the male erects one or more spicules out of the cloaca and uses them to penetrate the female's genital pores. The sperm then travels down the spicules and into the uterus.

Fertilization
Once the sperm enters the uterus, it can make contact with the eggs and fertilize them. Not all eggs are able to become fertilized from the transaction, but most will. The eggs then are passed out of the female and into the ground, or for a roundworm that is currently in a host, into the intestines. The eggs then hatch into small larva, which grow into full size adult roundworms between 6 and 20 inches.

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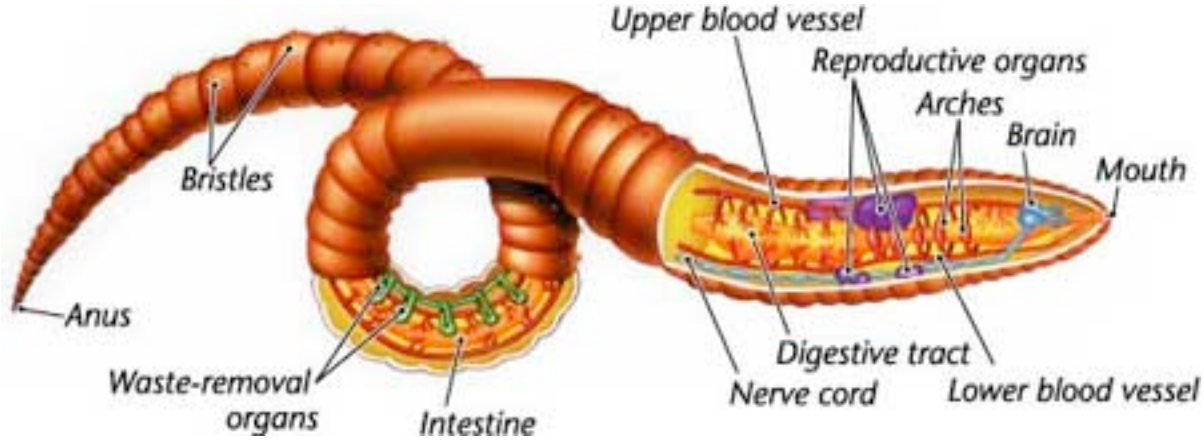
Segmented Worms



Segmented worms have bodies made up of many-linked sections called segments. On the outside, the segments look nearly identical. On the inside, some organs are repeated in most segments. For example, each segment has tubes that remove wastes. Other organs, however, such as the worm's reproductive organs, are found only in some segments. Nerve cords and a digestive tube run along the length of the worm's body. Like roundworms, segmented worms have a one-way digestive system with two openings. Segmented worms also have a closed circulatory system with a heart. In a closed circulatory system, like your own, blood moves only within a connected network of tubes called blood vessels.

Reproduction

To mate, two worms come together in opposite directions. They line up their clitellum with the sperm-producing segments (segments 9 and 10) located on the other worm, and transfer sperm. A mucous layer (sheath) forms over the clitellum. The worm begins to shed the mucous layer after copulation. As the worm is crawling out, the sheath passes over the female reproductive organs where eggs are released into the sheath, and the male parts where the stored sperm is also released. Once the worm has completely shed the mucous layer, this sheath forms a cocoon of fertilized eggs that eventually hatch.

Habitat

Terrestrial segmented worms live and breed in soil. Some species can live in rotting logs and other places where conditions are similar to soil. Worms require moist, dark surroundings for survival and reproduction. They breathe through their skin by transferring oxygen trapped in the moist soil. Too much moisture in the soil, as happens after a heavy rainfall, will inhibit respiration. Worms will climb to the surface of the soil and are often found there after rain.

Significance

Earthworms are responsible for processing dead plant material into nutrient-rich soil. Along with recycling nutrients, the tunneling behavior of earthworms also helps to mix plant debris into the soil for faster decomposition. The tunnels create spaces for plant roots and allow water to travel deep into the soil. Adequate soil conditions will allow an earthworm to produce up to 80 cocoons per year, each with approximately 20 eggs, perpetuating this nutrient cycling service.

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1. What do flatworms, round worms, and segmented worms similar? _____

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2. How do flatworms eat? _____

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3. Describe the process of budding for flatworms. _____

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4. How do roundworms eat? _____

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5. Describe the process of fertilization for round worms. _____

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6. Describe how segmented worms reproduce. _____

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7. What are the requirements for segmented worms to live in? _____

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8. Why are segmented worms important to earth? _____

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