**Phylum Annelida: The Segmented Worms**

**What is an Annelid?**

* Annelids are worms with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Their name comes from the Latin *annellus* which means ‘little ring’
* Annelida is the first phylum with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – a body cavity surrounded in mesoderm
* Along with Arthropoda and Mollusca, Annelida are considered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which means they develop mouth first in early development
* While considered less advanced than the Deuterostomes, these phyla are the dominant animals on Earth today

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**Body Plan**

* Like flatworms and roundworms, annelids develop from three germ layers – triploblastic
* At this point in animal evolution, a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ developed. So there is mesoderm - and therefore muscle - around the skin and the gut
* Tube-within-a-tube \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – coordinated digestion and specialization of the food tube begins



* ****Segmented bodies separated by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (internal walls) which may be modified to perform special functions ie. segments for eyes, antennae, excretion etc
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ may line the ventral side of the worm to aid in movement

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**Feeding and Digestion**

* Diverse feeding methods from filter feeders to predators
* Carnivorous worms such as *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* have sharp jaws
* Decomposers may use a sticky mucous covered pharynx to feed on decaying vegetation while others filter out food particles in water in a mucous bag
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ feed on the blood of the host
* Earthworms have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to move food and soil into the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Food moves to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ then muscular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into smaller pieces before being absorbed in the intestine



**Circulation**

* First phylum to have a circulatory system - frees them from diffusion of materials - can grow larger.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where blood is contained within a network of \_\_\_\_\_\_\_\_\_\_\_\_\_
* Also have “hearts” or sets of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that pump blood through dorsal and ventral blood vessels that run the length of the body

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**Respiration**

* Aquatic annelids often \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which exchange gases underwater
* Terrestrial annelids must stay moist as they still rely on \_\_\_\_\_\_\_\_\_ through their skin for gas exchange

**Excretion**

* Have specialized excretory units called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in pairs in each segment
* Used as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Response**

* Nervous system has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* There are many adaptations for detecting stimuli including sensory tentacles, chemical receptors, statocysts for balance and ocelli for detecting light

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**Movement**

* Hydrostatic skeleton with two groups of body muscles which contract to make the worm shorter and fatter or longer and thinner
* By alternately contracting these muscles, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, burrowing annelids can move through the ground
* Marine annelids have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (“foot-like”)

**Reproduction**

* Usually sexual reproduction with separate sexes and external fertilization
* Specialized region called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where fertilization takes place then forms a protective cocoon

**Annelid Classes**

There are three major classes of Annelids:

* Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: ex. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: ex. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: ex. the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Class Oligochaeta**

* “few hairs”
* Contains the earthworm
* Move using \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(bristles)
* Fairly well adapted to land but must stay in moist environment
* Head is reduced as are obvious sense organs

**Class Polychaeta**

* "many hairs"
* Contains “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” that are modified setae
* Used as paddles (thus this class is marine) to move about - beginning of appendage development
* Also used as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - beginning of respiratory system
* Include sandworms and tubeworms
* The sandworm shows the parapodia development

**Class Hirudinea**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* These are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that feed upon the blood of vertebrates including us.
* Most common in fish
* Can be used for medical purposes