



ANNELIDA

THE METAMERIC BODY

FORM

TOPIC 2

ANIMAL DIVERSITY

General Characteristics

- ▶ Body **metameric**, bilaterally symmetrical, and **wormlike**
- ▶ **Protostome characteristics** include spiral cleavage, trochophore larvae (when larvae are present), and schizocoelous coelom formation
- ▶ **Paired, epidermal setae**
- ▶ **Closed circulatory system**
- ▶ **Dorsal suprapharyngeal ganglia** and ventral nerve cord(s)
- ▶ with ganglia
- ▶ **Metanephridia** (usually) or protonephridia

Members



Earthworm



Leech

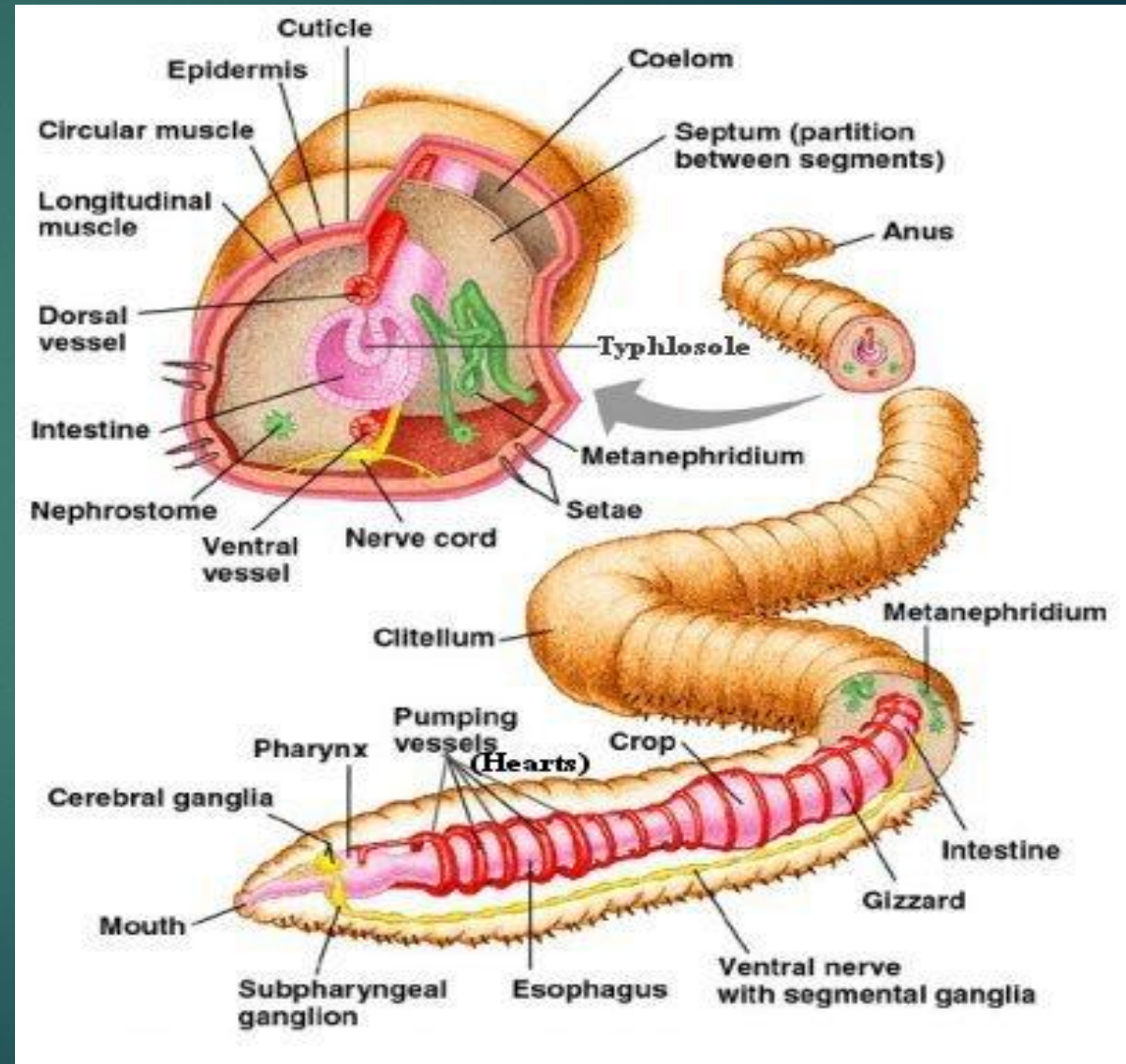


Neries

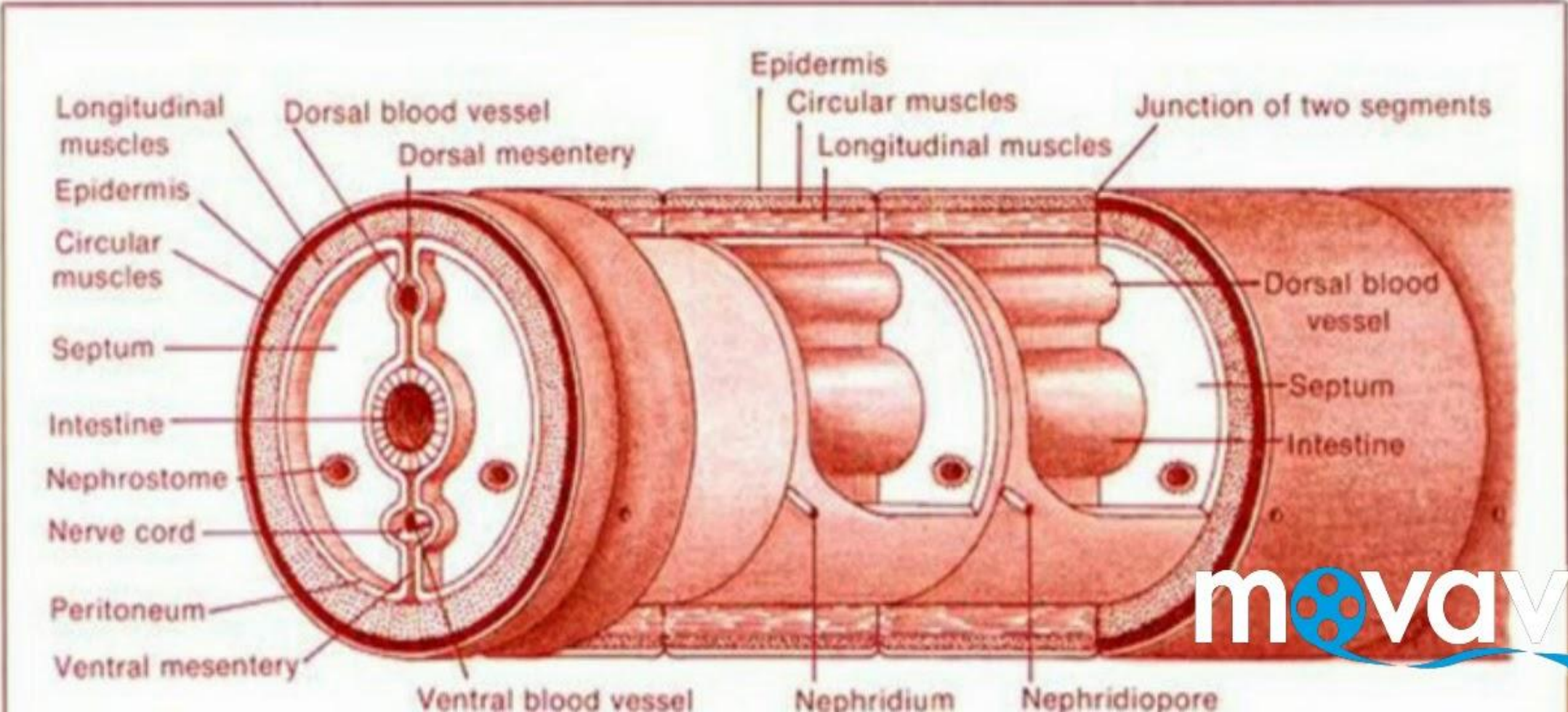
METAMERISM AND TAGMATIZATION

Earthworm bodies are organized into a series of ring like segments. What is not externally obvious, however, is that the body is divided internally as well.

Segmental arrangement of body parts in an animal is called metamerism (Gr. *meta*, after *mere*, part).



Metamerism




Significance of Metamerism:

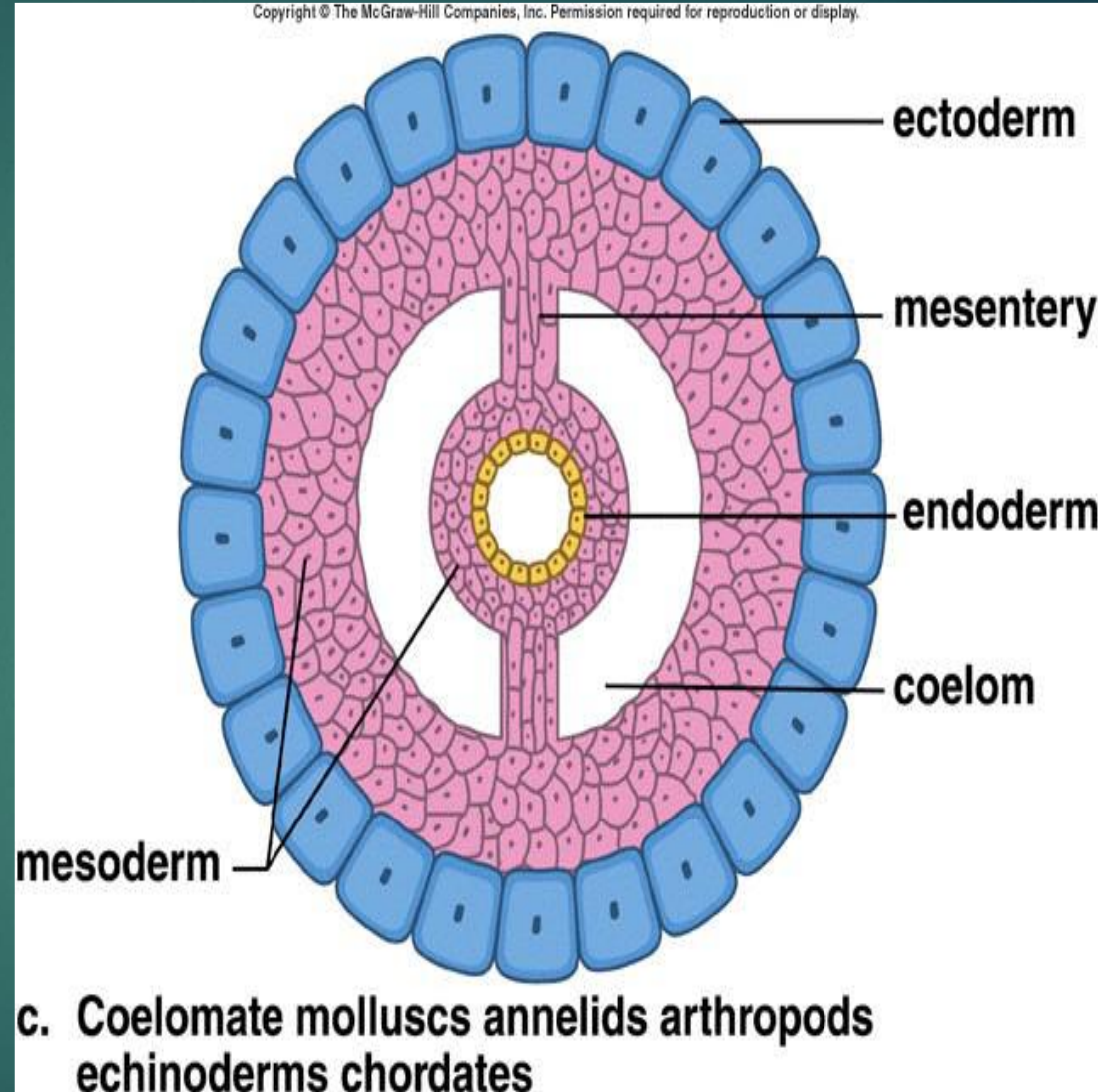
The compartmentalization of the body has resulted in each segment having its own excretory, nervous, and circulatory structures.

Two related functions are probably the primary adaptive features of metamerism:

- ▶ *flexible support*
- ▶ *efficient locomotion*
- ▶ Each segment has its coelomic space separated by septa and each segment has its own muscles.

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- ▶ Body is divided into segments that are separated by **septa** (internal walls between each segment).
 - ▶ Some body segments may carry one or more pairs of eyes, several pairs of antennae, and other organs.
 - ▶ Sometimes called “**bristle worms**” because of the tiny chitinous bristles that they bear (except leaches) called **setae**.

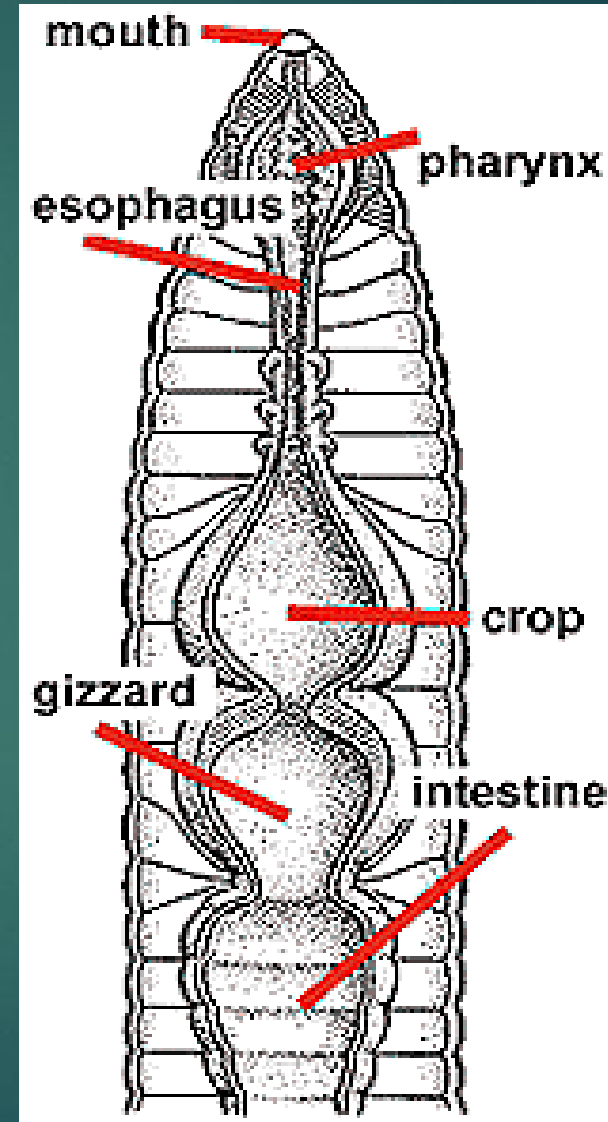
- ▶ Body type: bilateral
- ▶ **Ecological role:**
 - Parasitic
 - Food source
 - Aerate soil
 - Breakdown material
- ▶ **Body organization:**
 - ▶ 3 layers – endoderm,
 - ▶ mesoderm, ectoderm
- Body cavity: coelom**



Coelom

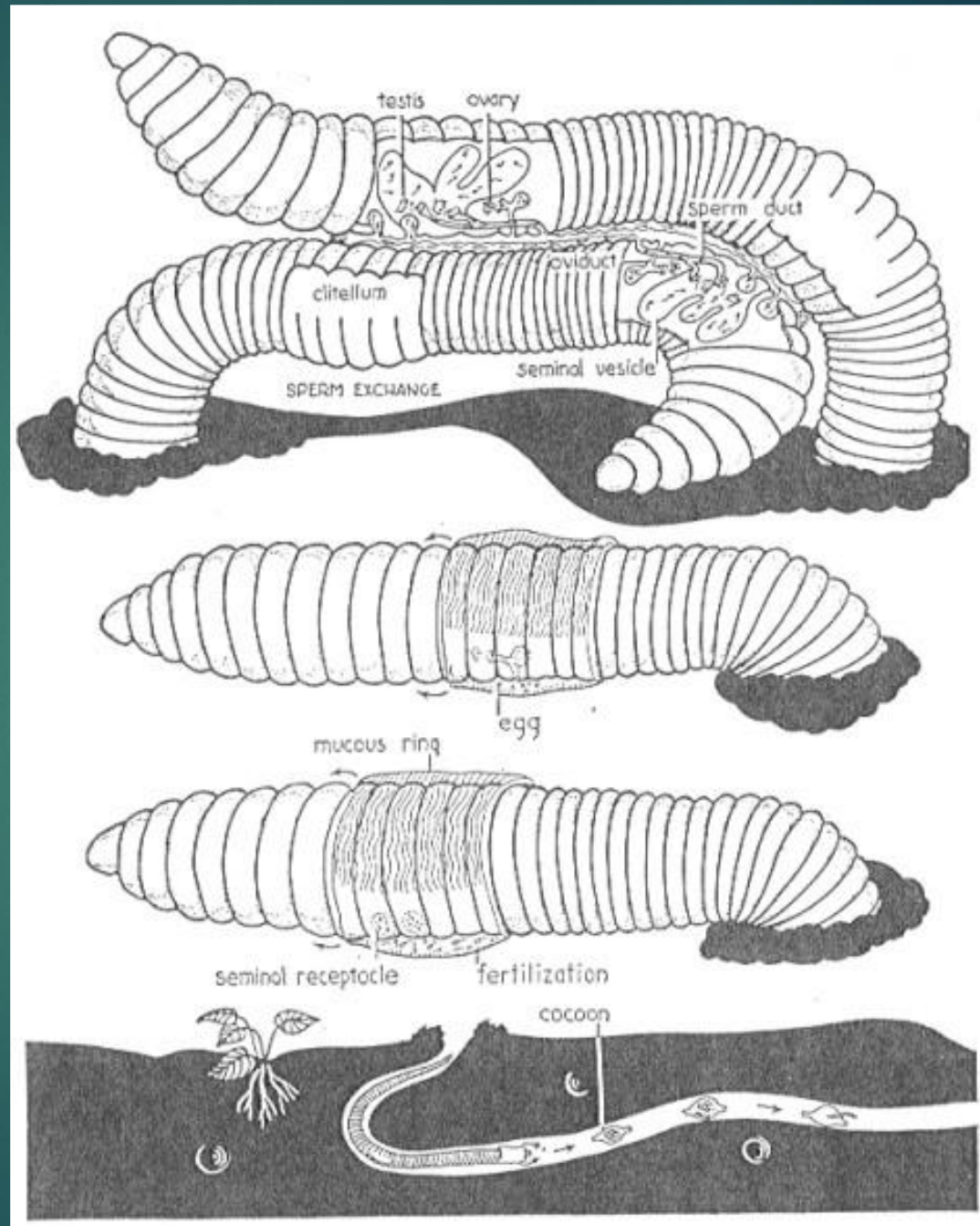
Digestive system

- **complete** with mouth & anus
- Food first moves through the crop, where it is stored
- Then it moves through the gizzard where it is ground into smaller pieces.

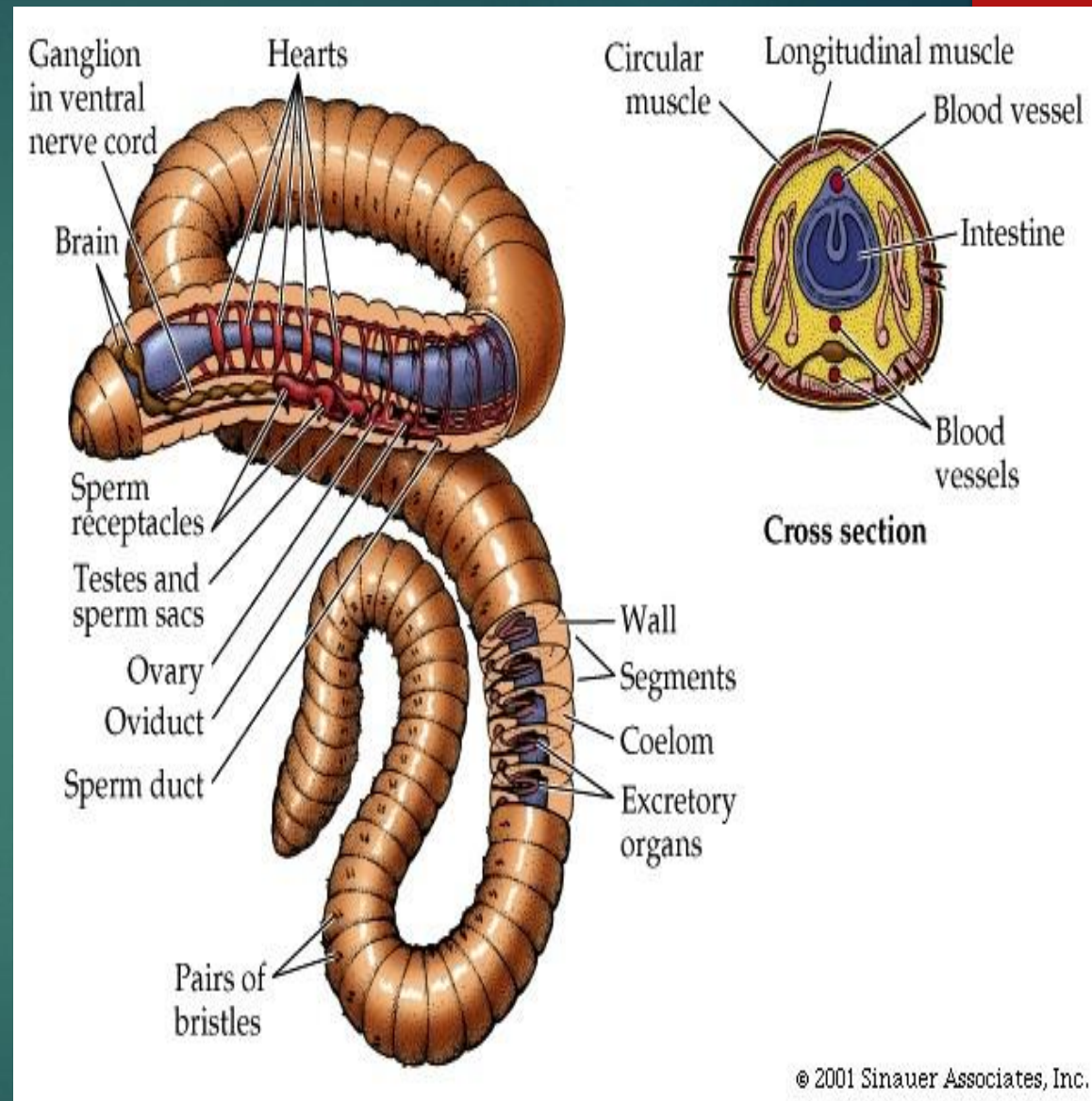


Reproduction

- Sexual:
Hermaphroditic with cross fertilization
- Asexual: NONE



- Circulation: blood, blood vessels & aortic arches = **closed**
- Nervous system: brain, ganglion, nerves, sensory organs
- Respiration: pharynx or gills
- Excretion: nephridia, anus, tubes
- Habitat: host (external), soil, water



nephridium's thin loop reabsorbs some solutes, relinquishes them to blood

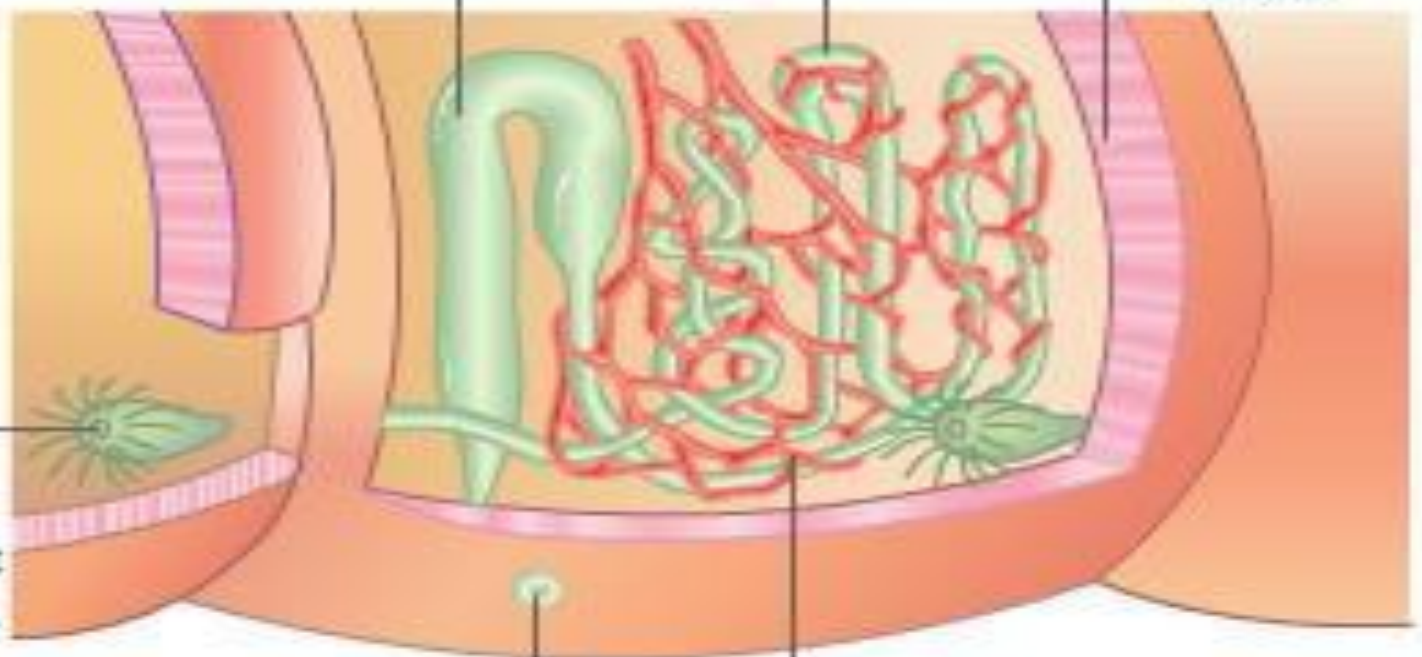
bladderlike storage region of nephridium

body wall

funnel (colemic fluid with waste enters here)

external pore (fluid containing wastes discharged here)

blood vessels



Classes

- Oligochaeta – Earthworm
 - Polychaeta – Marine worm
 - Hirudinea – Leech
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- Free living – earthworm & marine worm
 - Parasitic - leech

Class Polychaeta (pole-ke-tah)

The largest annelid class;
mostly marine; head with eyes
and tentacles;

parapodia bear numerous
setae;

monoecious or dioecious;

development frequently
involves a trochophore larval
stage.

Nereis, *Arenicola*, *Sabella*.
More than 5,300 species.



Neries



Arenicola



Sabella

Class Oligochaeta (ol i-go-ke-tah)

Few setae and no parapodia;
no distinct head; monoecious
with

direct development; primarily
freshwater or terrestrial.

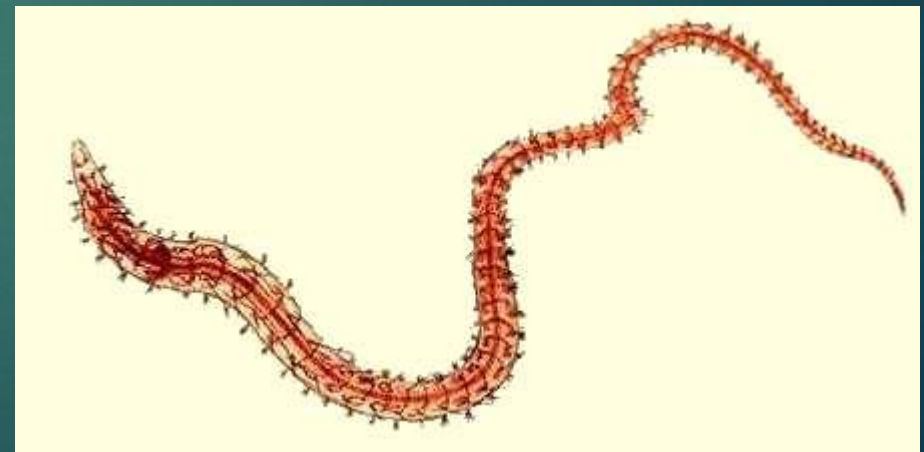
Lumbricus,

Tubifex.

Over 3,000 species.



Lumbricus



Tubifex

Class Hirudinea (hiru-din e-ah)

- ▶ Leeches;
- ▶ bodies with 34 segments;
- ▶ each segment subdivided into **annuli**; anterior and posterior suckers present; monoecious with direct development; parapodia absent;
- ▶ setae reduced or absent.
- ▶ Freshwater, marine, and terrestrial. *Hirudo*. Approximately
- ▶ 500 species.





Thank You

QUESTIONS WILL BE APPRECIATED!