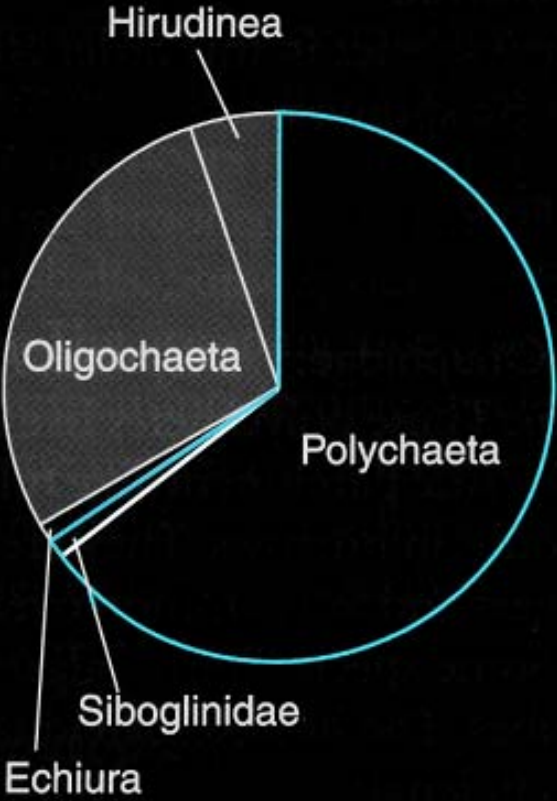
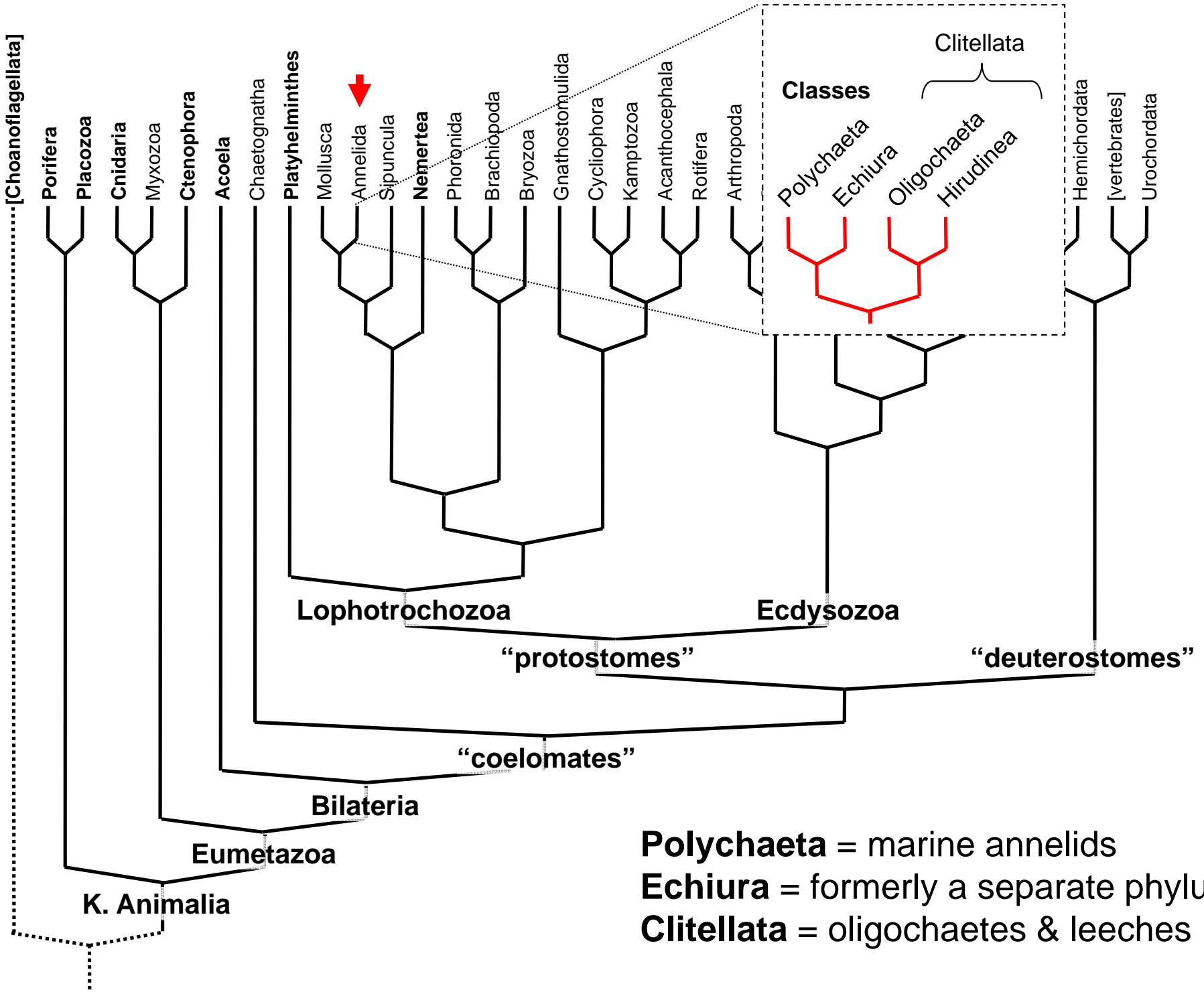


# Ph. Annelida

## Cl. Polychaeta

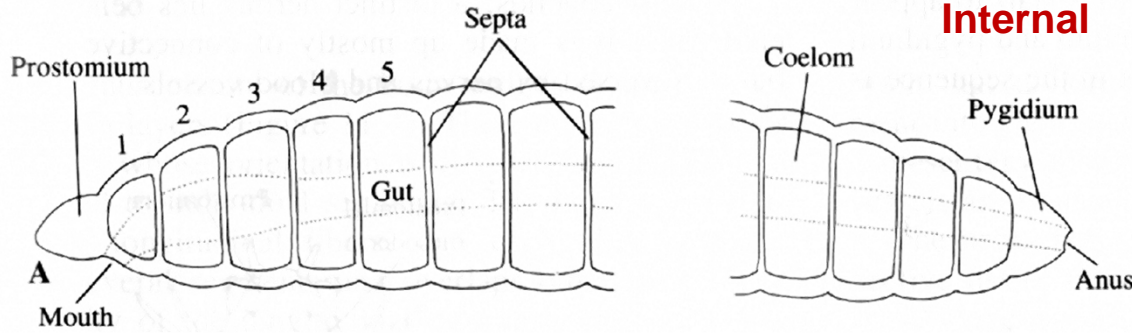


**Theme: segmentation**

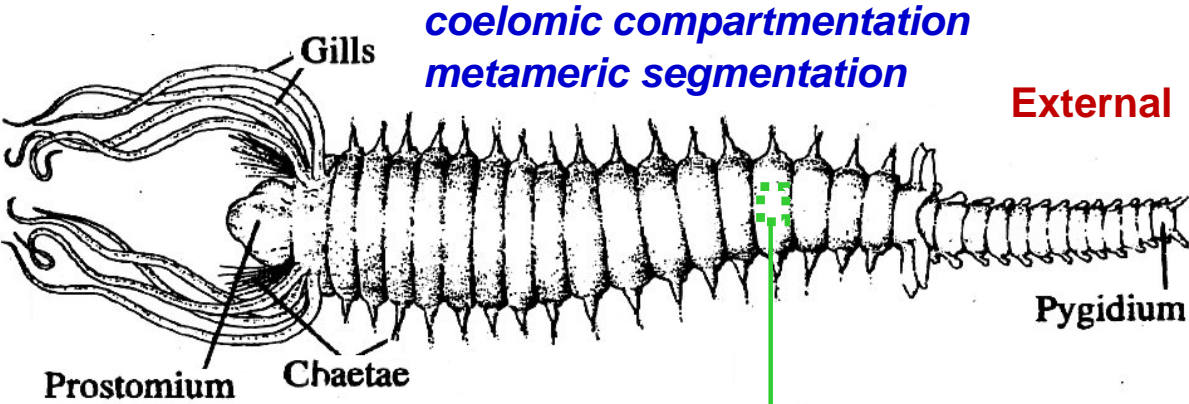


**Polychaeta** = marine annelids  
**Echiura** = formerly a separate phylum  
**Clitellata** = oligochaetes & leeches

# Polychaete: external features



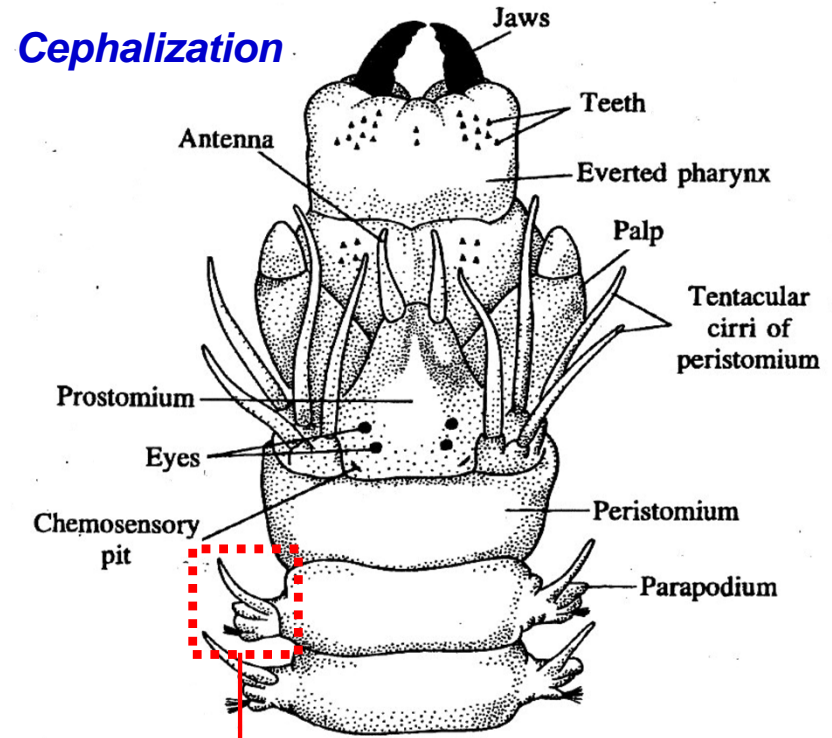
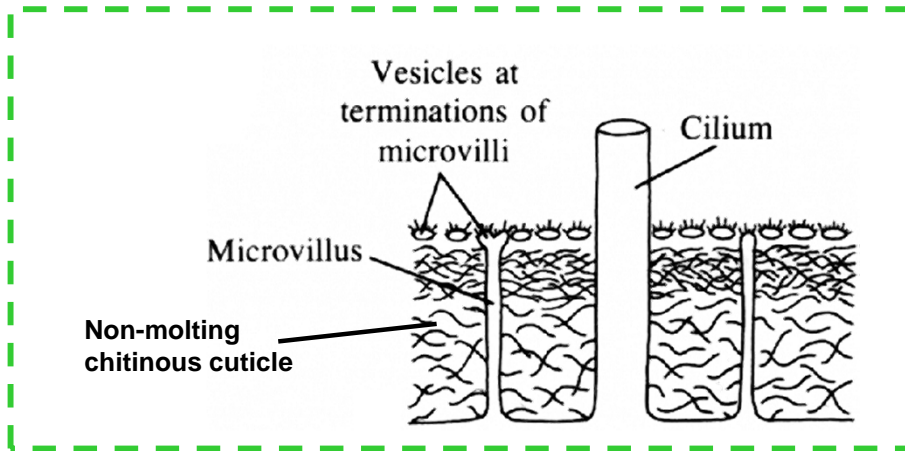
**Internal**



*coelomic compartmentation*  
*metameric segmentation*

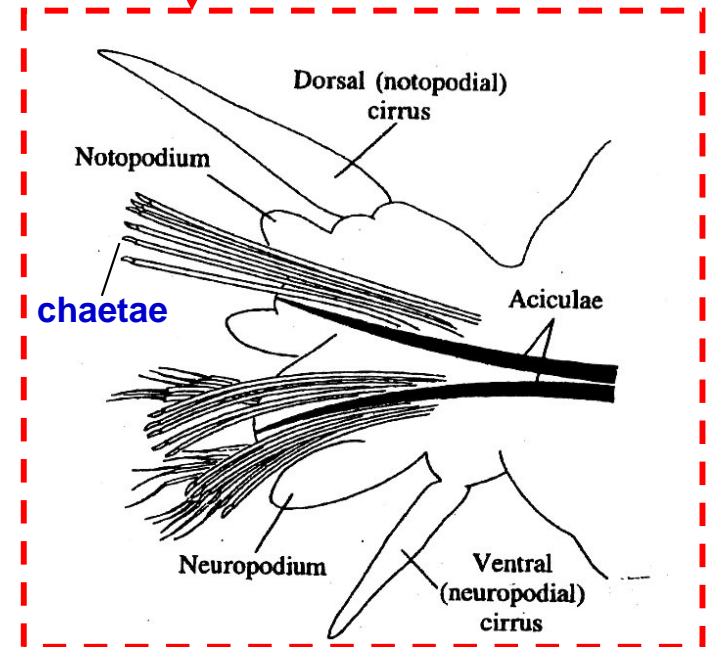
**External**

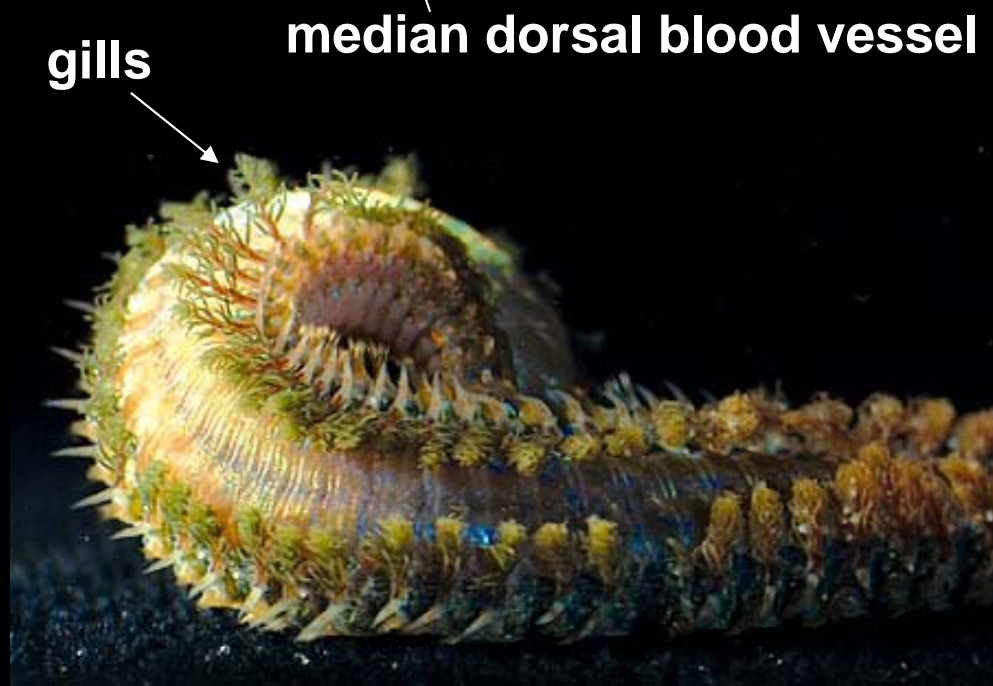
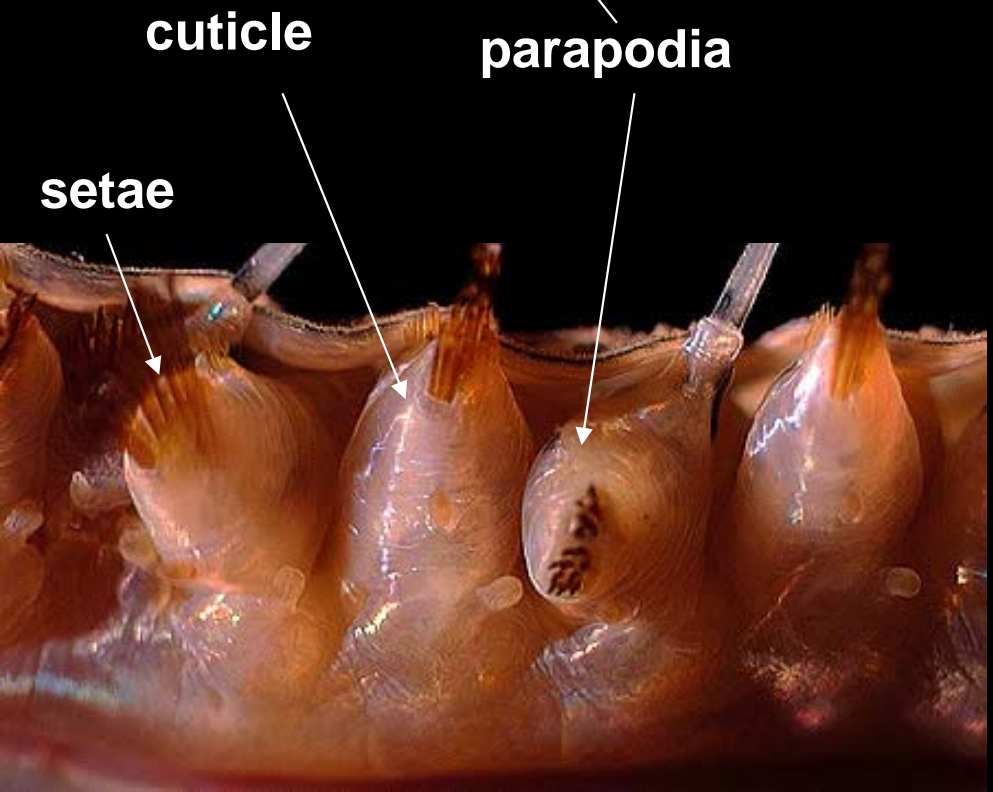
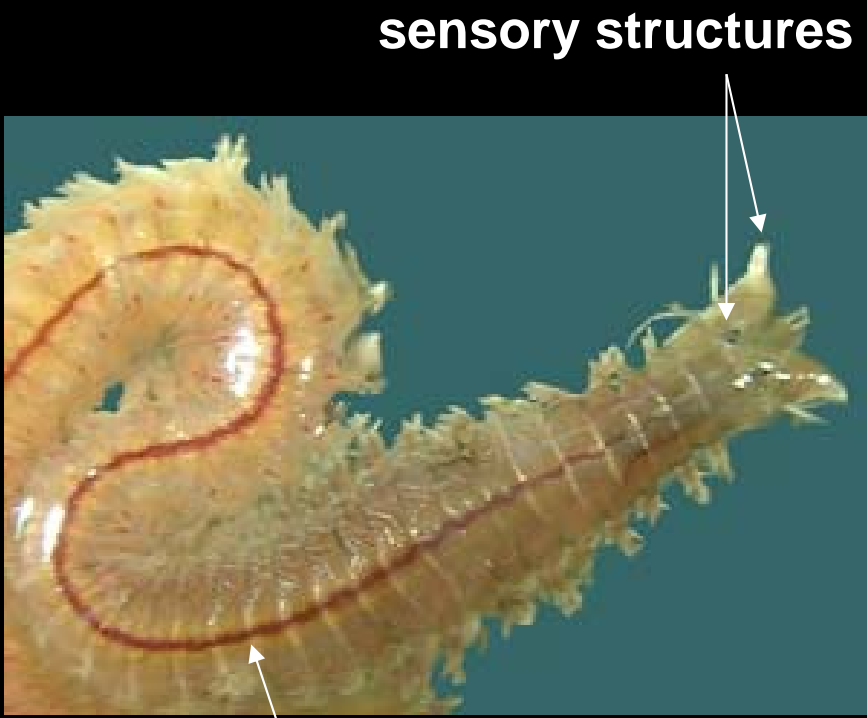
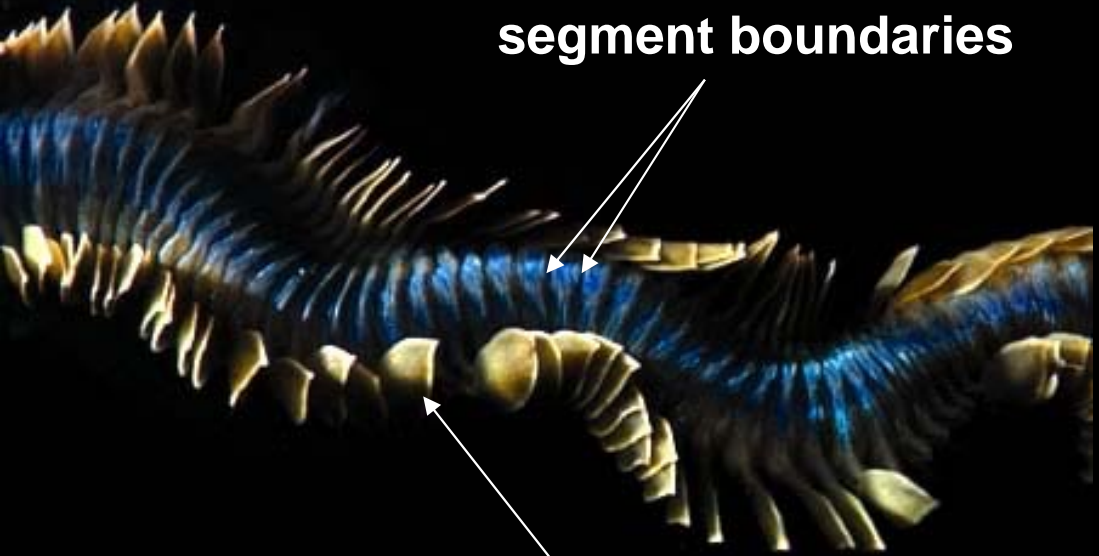
*chitinous cuticle*



**FIGURE 11.11** Head Region of a nereid polychaete, pharynx everted.

*paired parapodia*





# Polychaete: internal features

*complete gut*

*partitioned coelom*

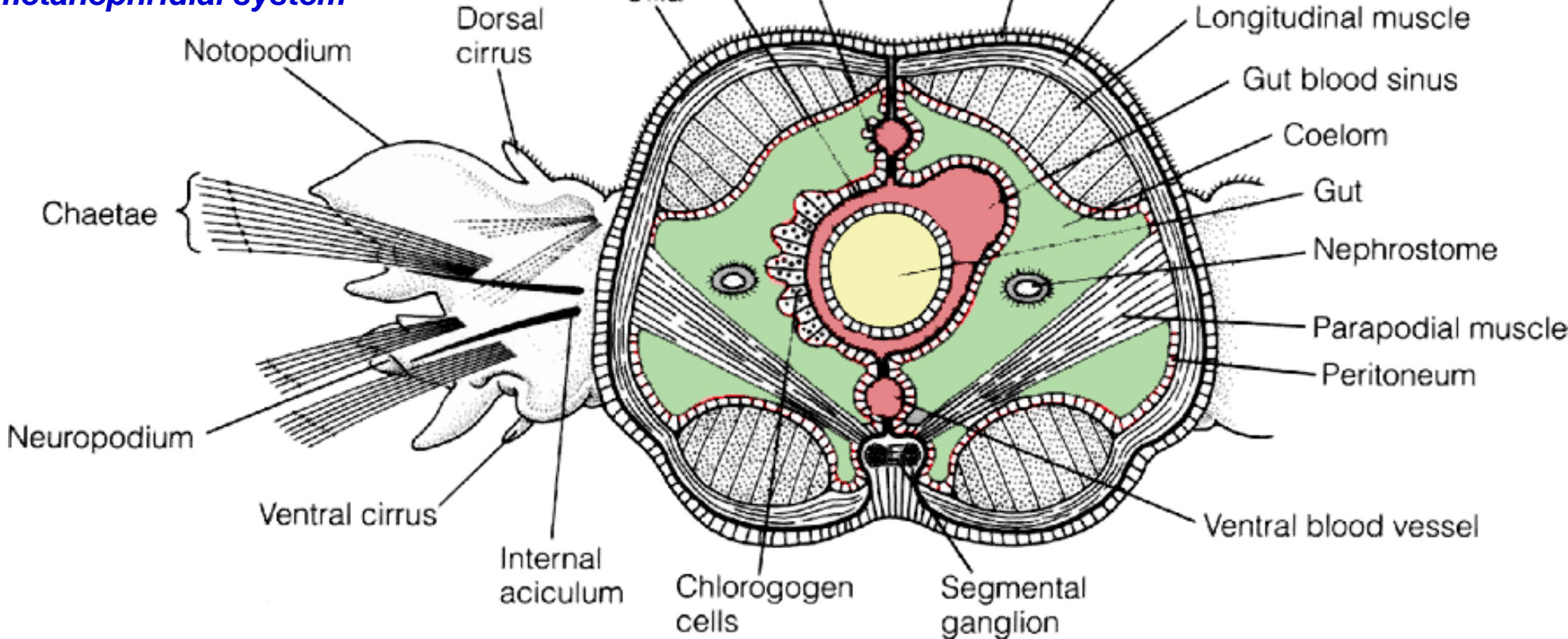
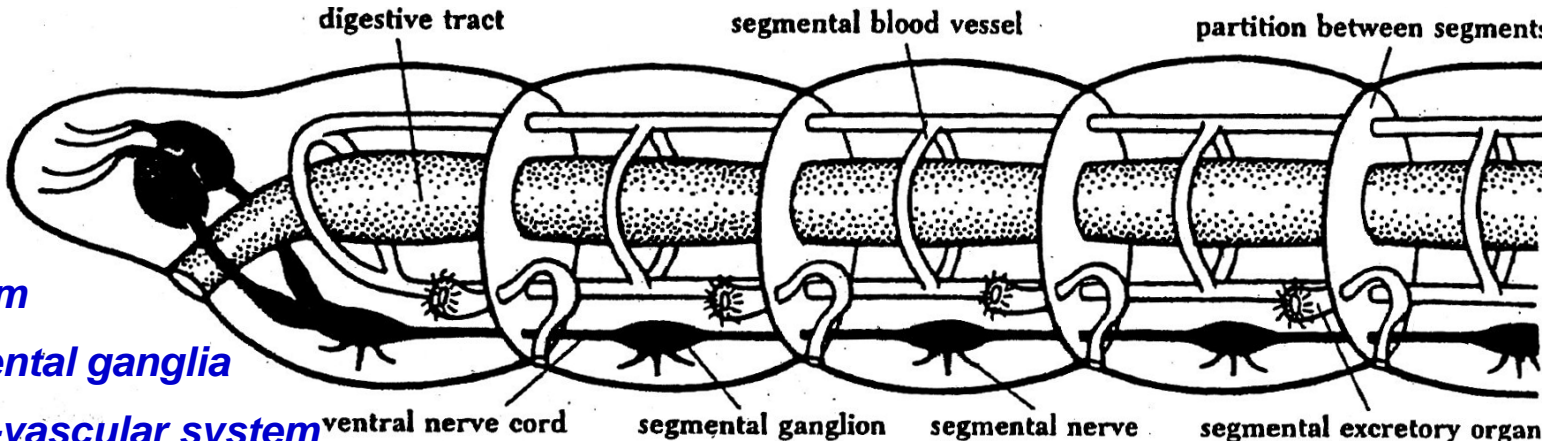
*cerebral & segmental ganglia*

*contractile blood-vascular system*

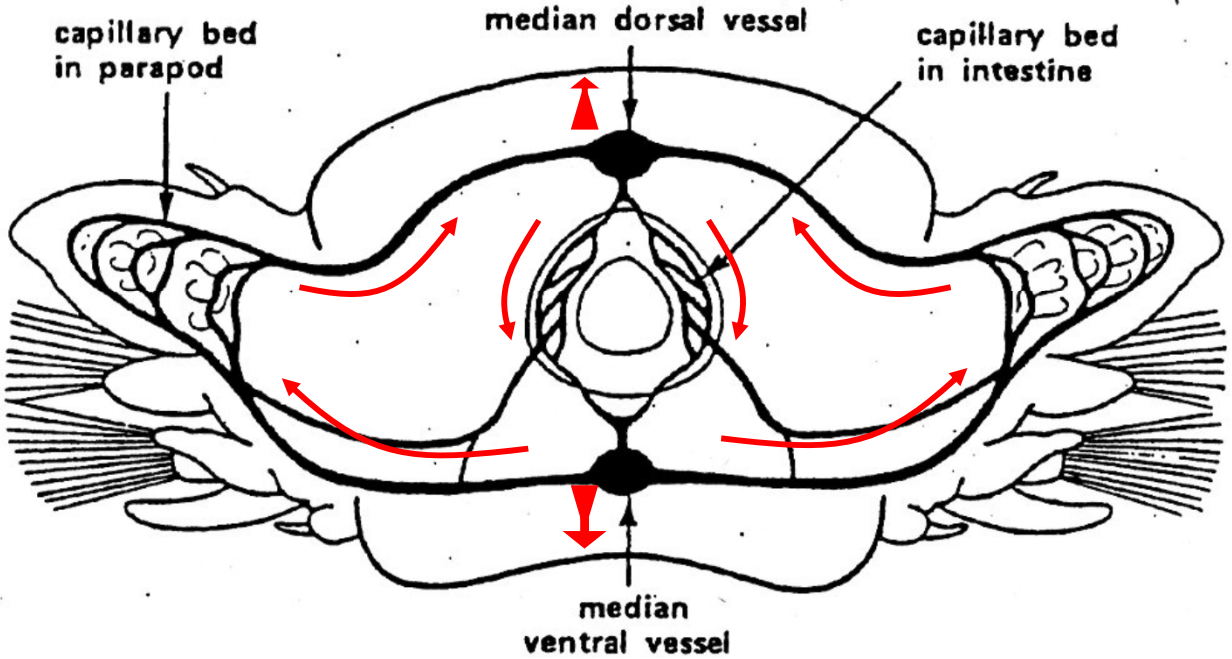
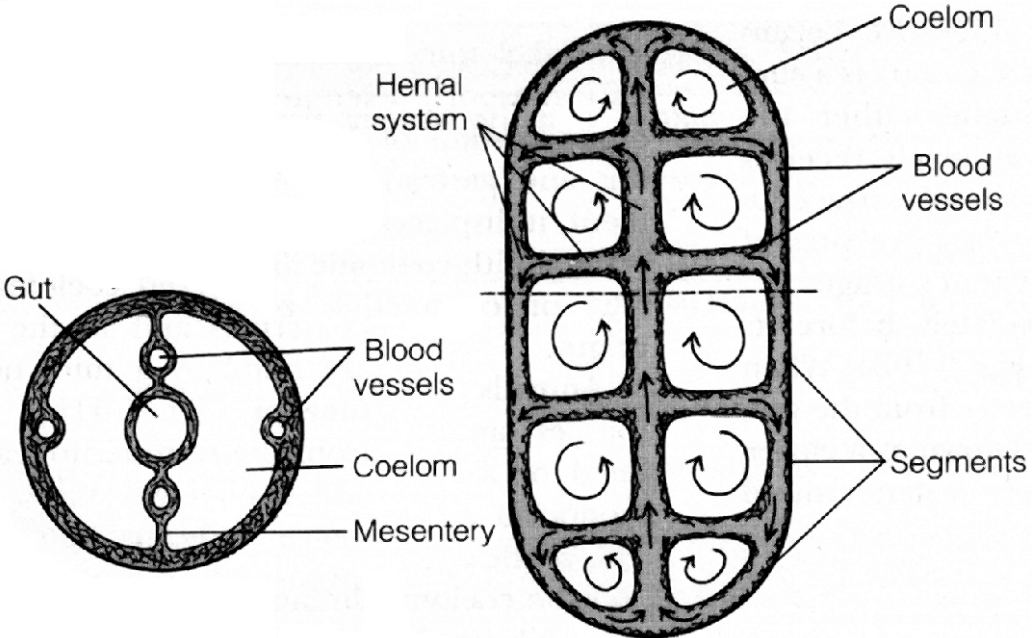
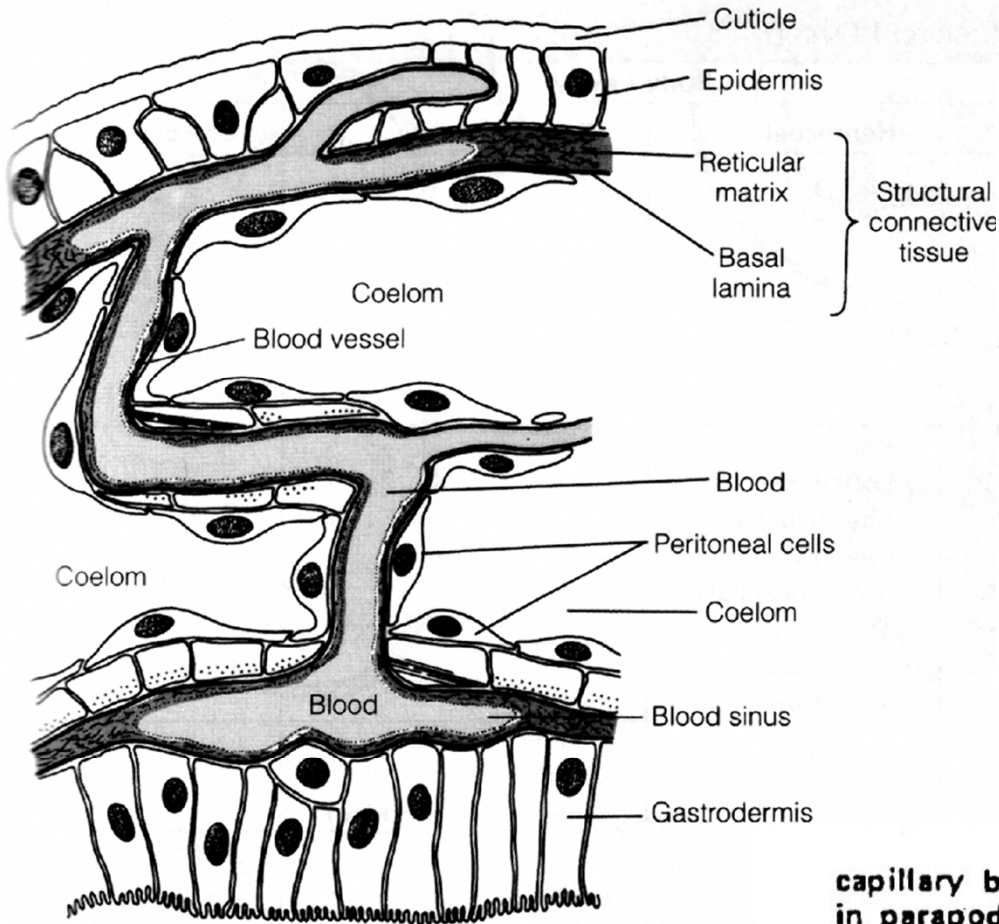
*respiratory pigments*

*(hemoglobin, chlorocruorin, hemerythrin)*

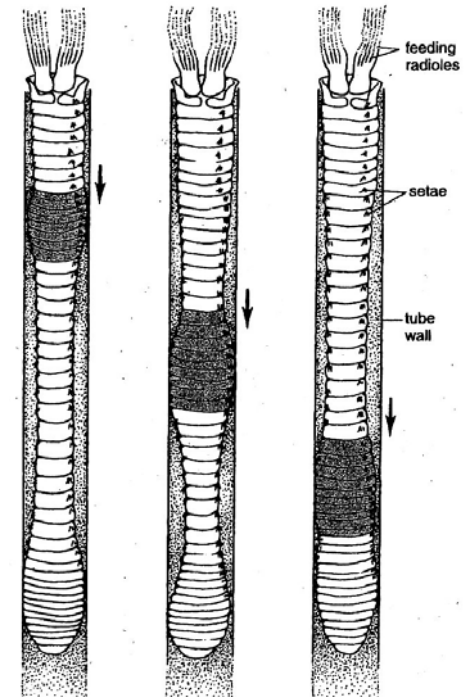
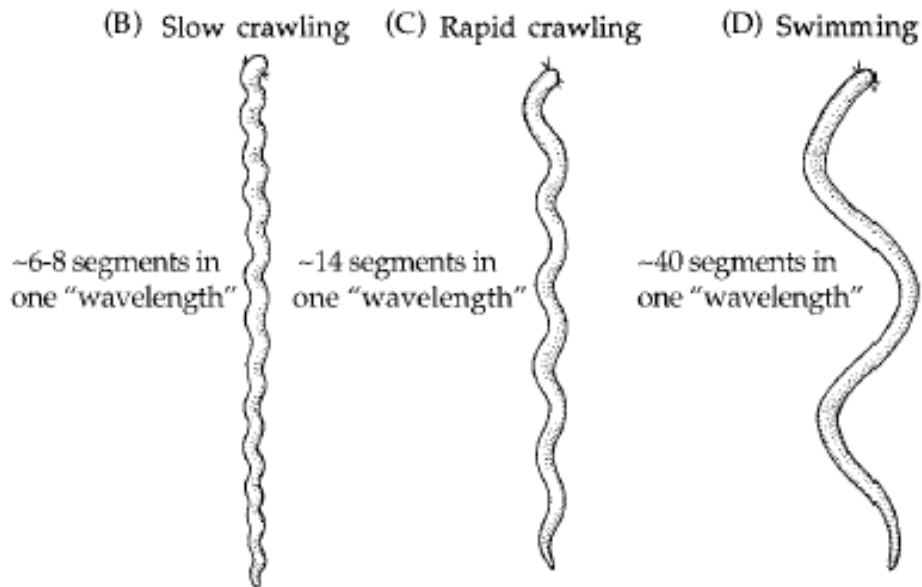
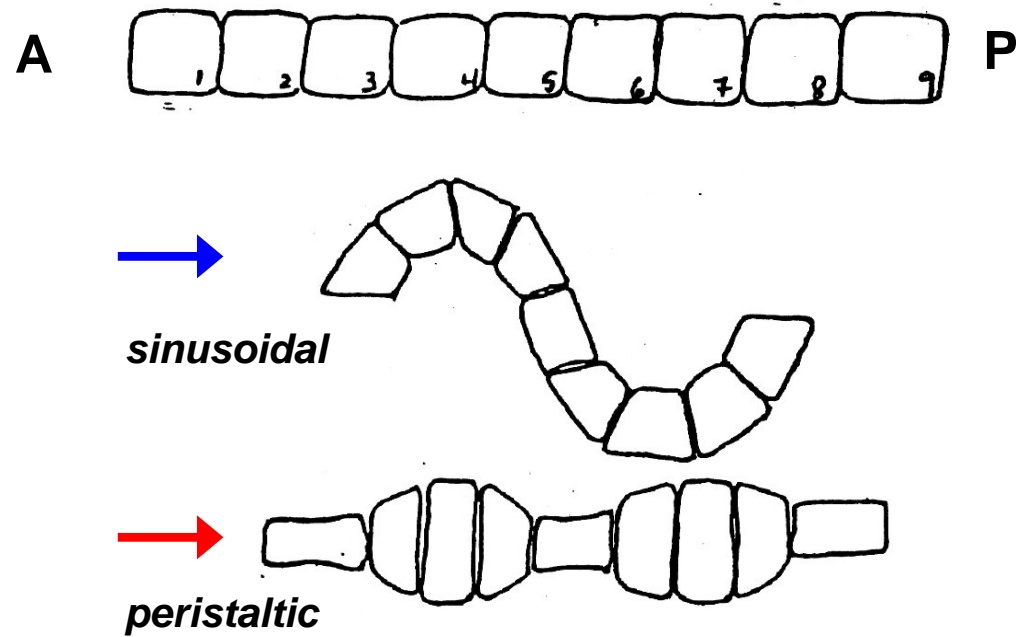
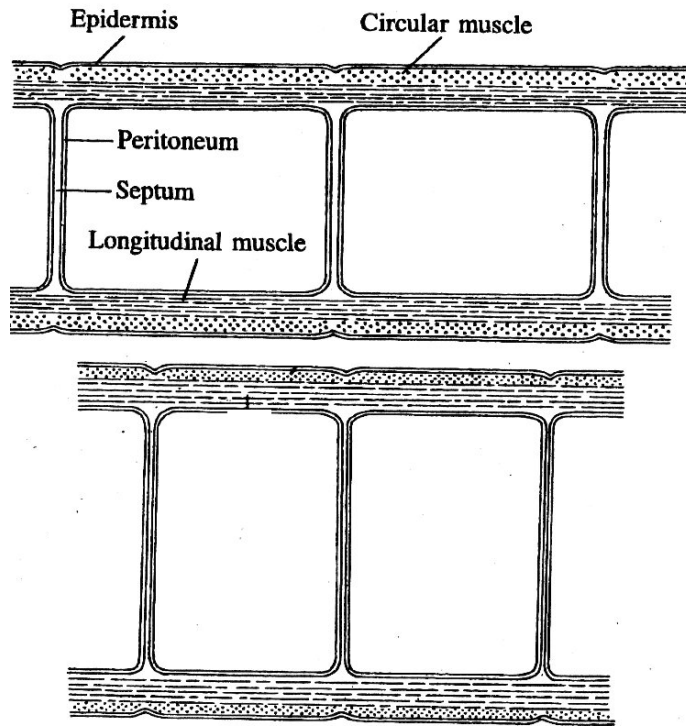
*metanephridial system*



# Blood-vascular system

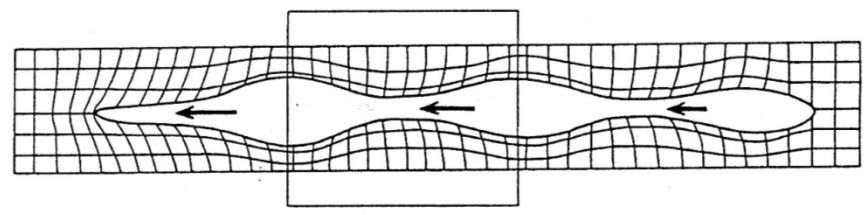
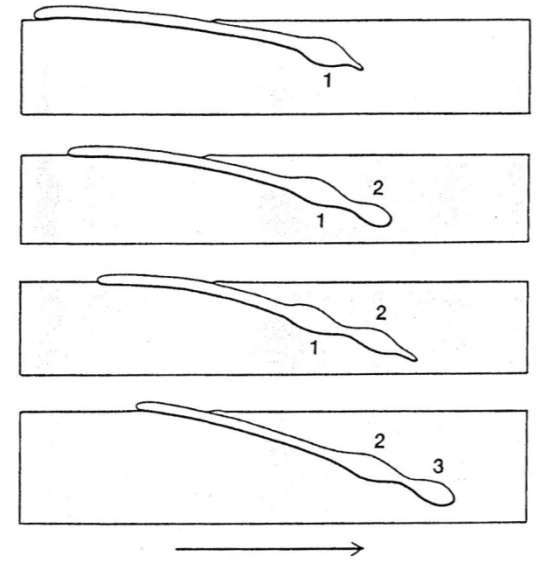
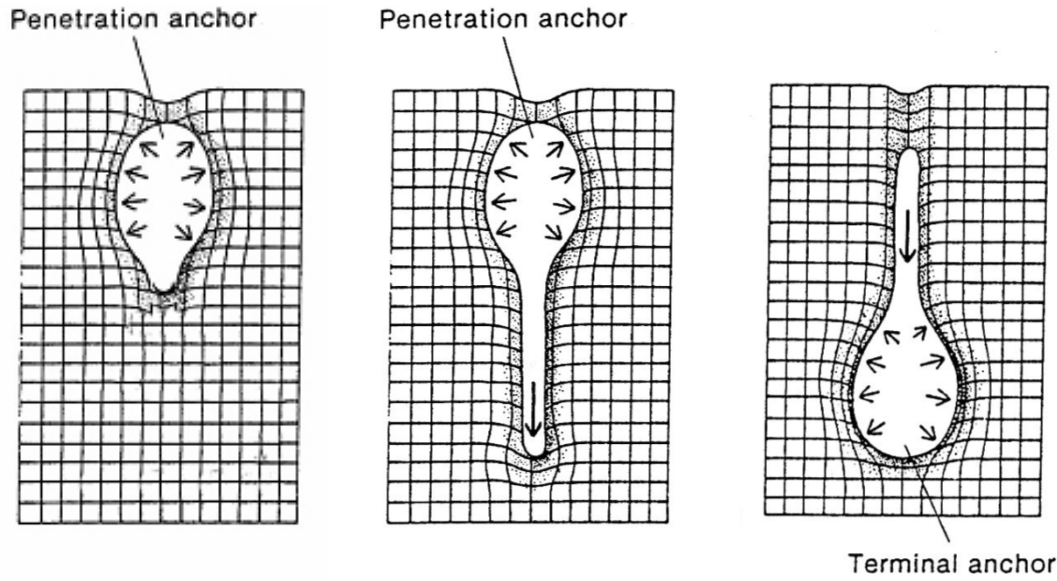


# Coelom: locomotion



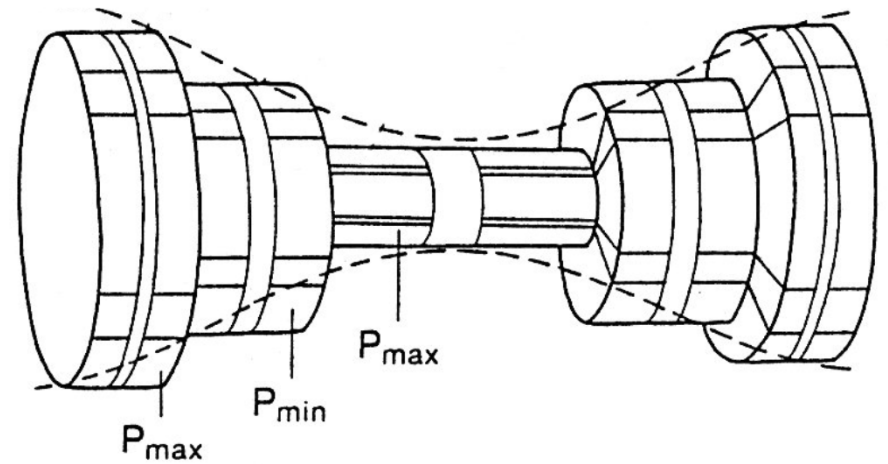
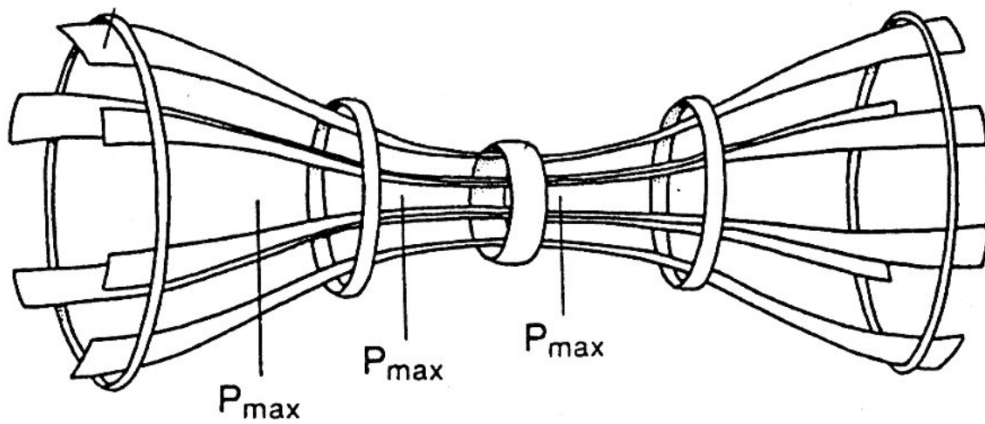
# How do worms burrow?

Formation and use of anchors



without segmentation

with segmentation

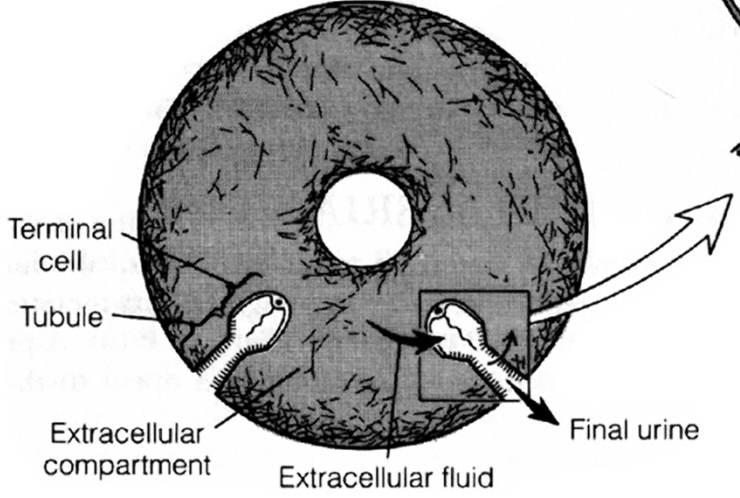
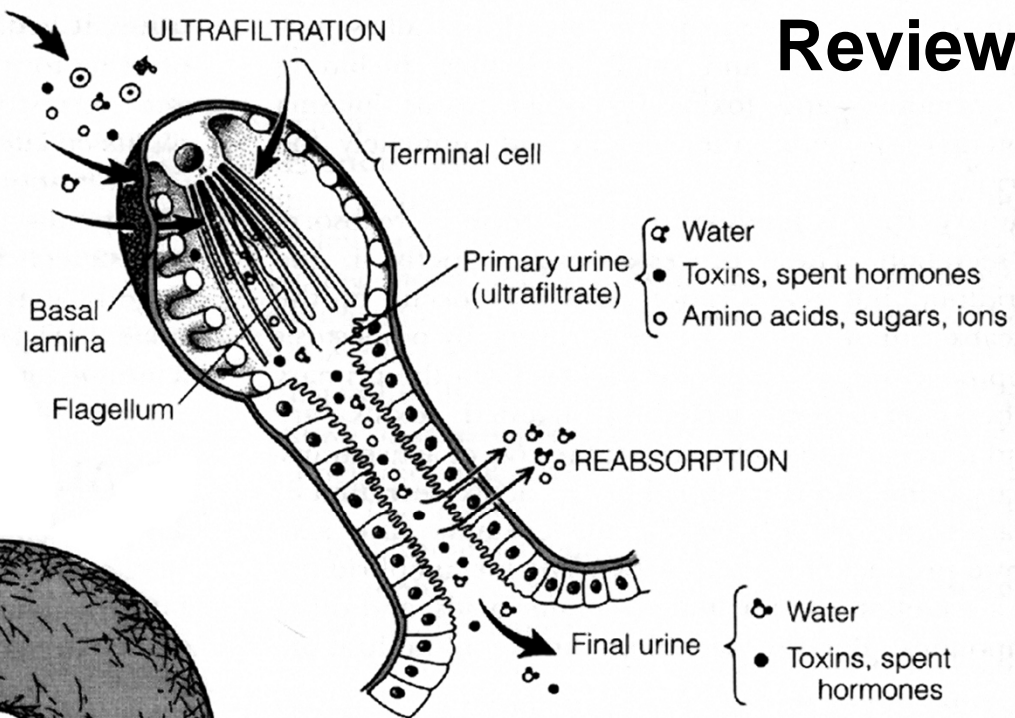




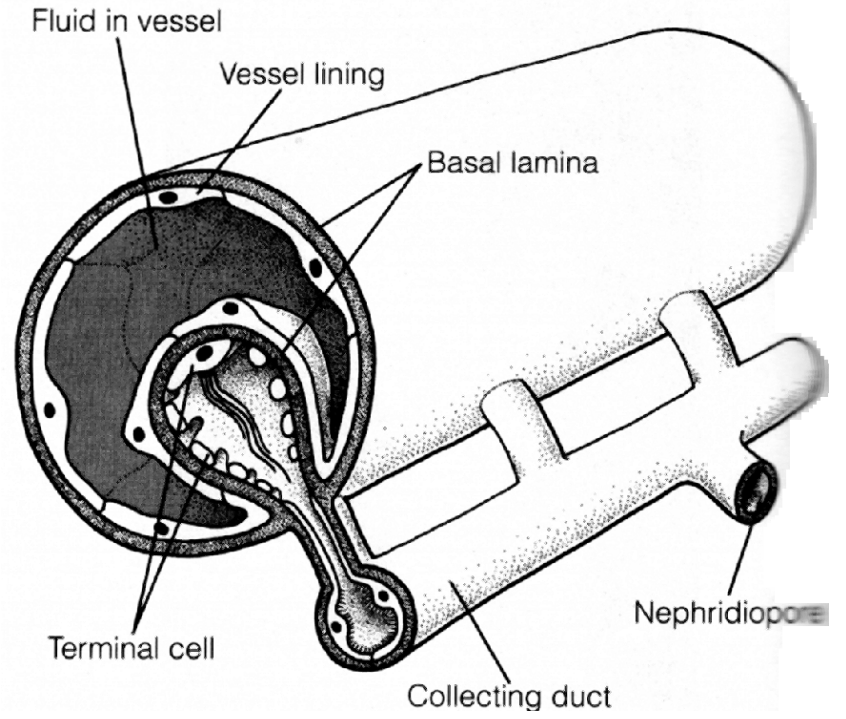
# Review: protonephridia

- Extracellular fluid:
- Water
  - Toxins, spent hormones
  - ✱ Protein
  - ⊙ Cell
  - Amino acids, sugars, ions

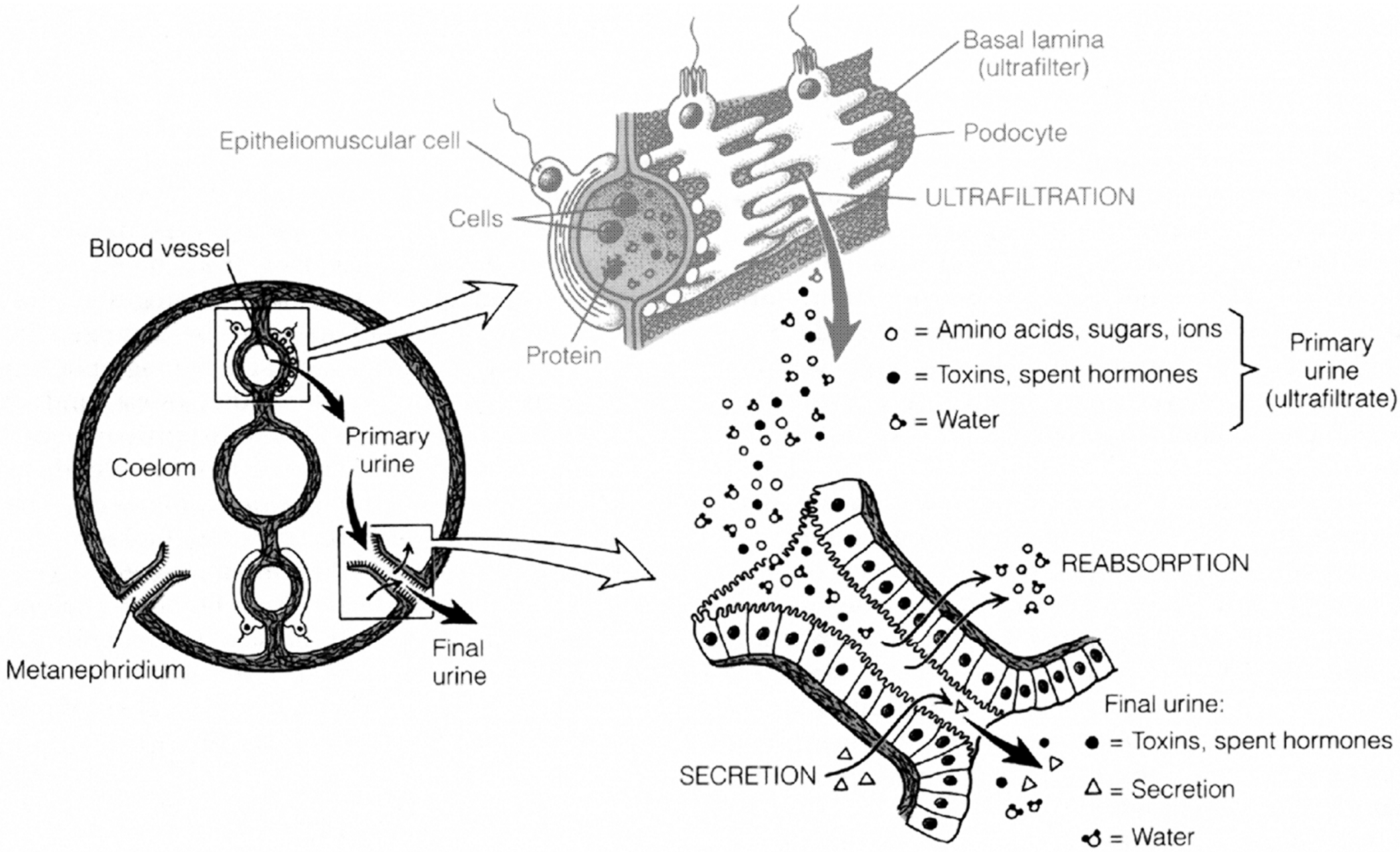
## flatworms



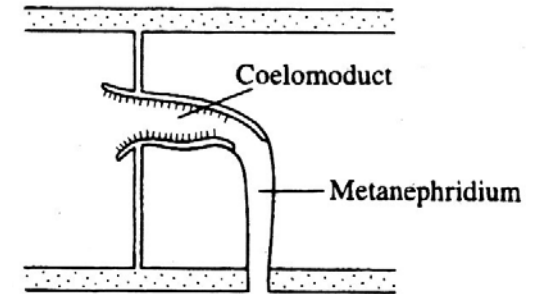
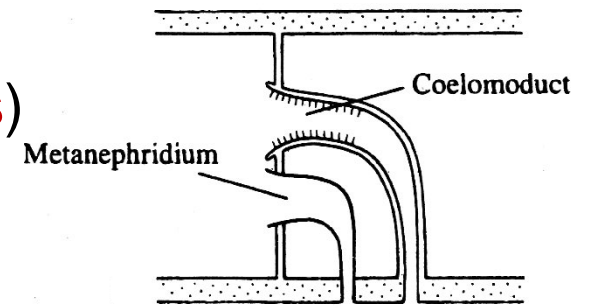
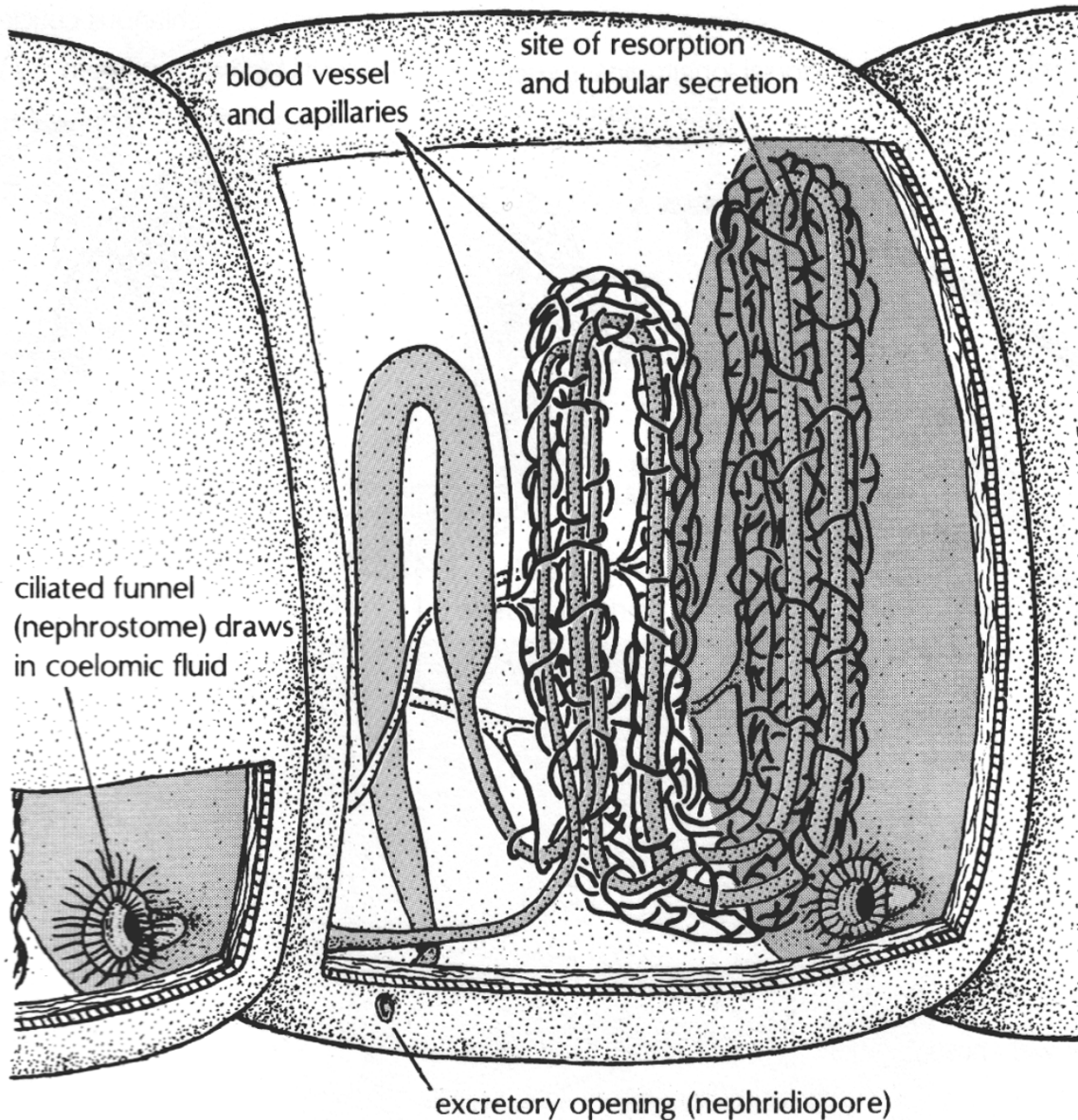
## nemerteans



# Metanephridia (large coelomate organisms)



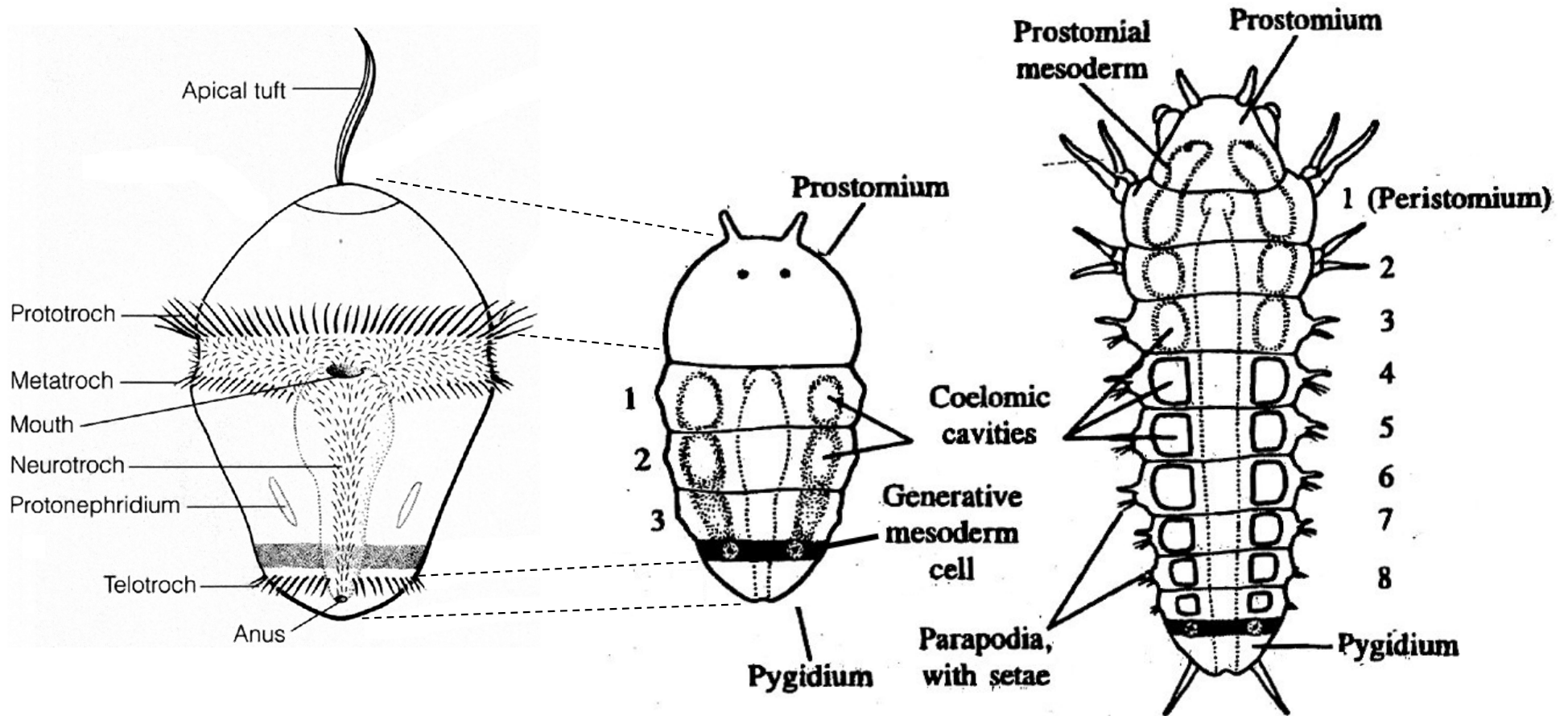
# Metanephridia (large coelomate organisms)



*"Mixonephridium"*

*coelomic collection of primary urine  
coelomic gonad*

# Larval biology and development

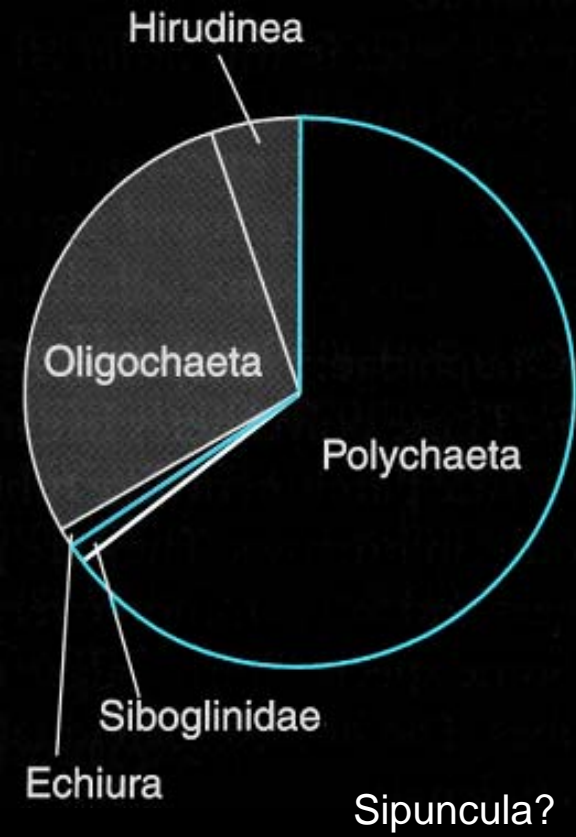


## “Trochophore-type” larva

- polychaete annelids (“trochophore”)
- molluscs (“trochophore”)
- sipunculans (“planktosphaera”)
- nemerteans (“pilidium larva”)

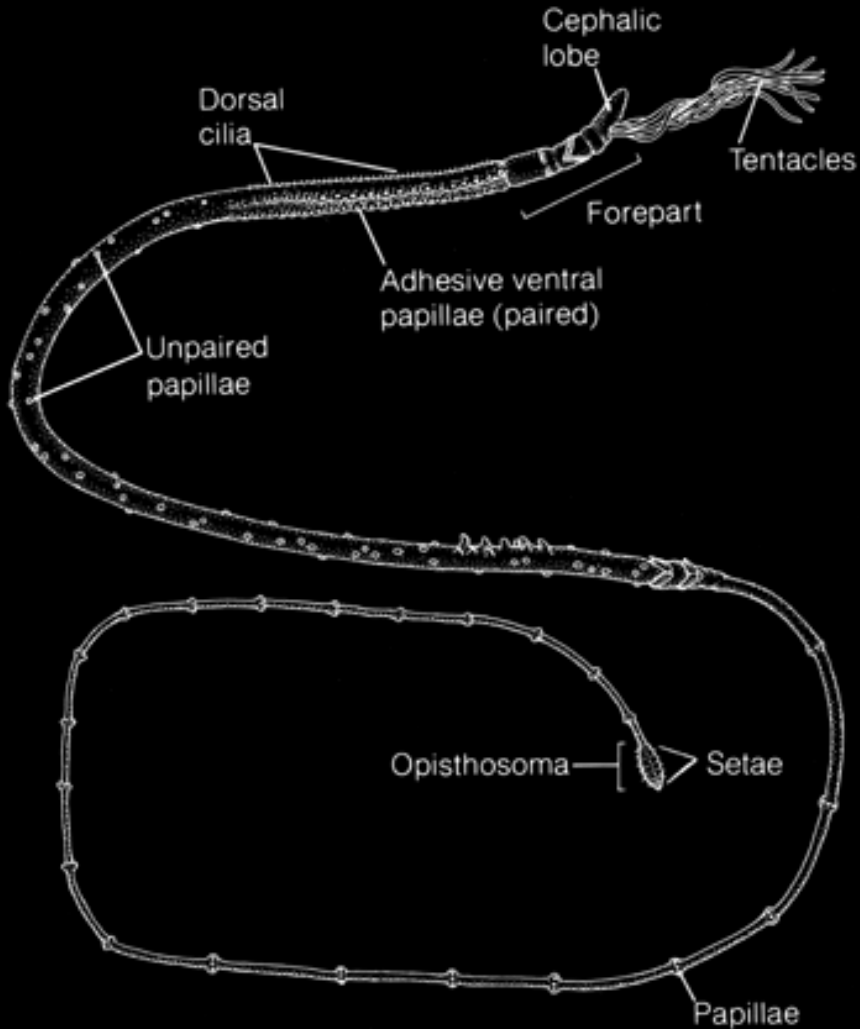
# Ph. Annelida

## Cl. Polychaeta

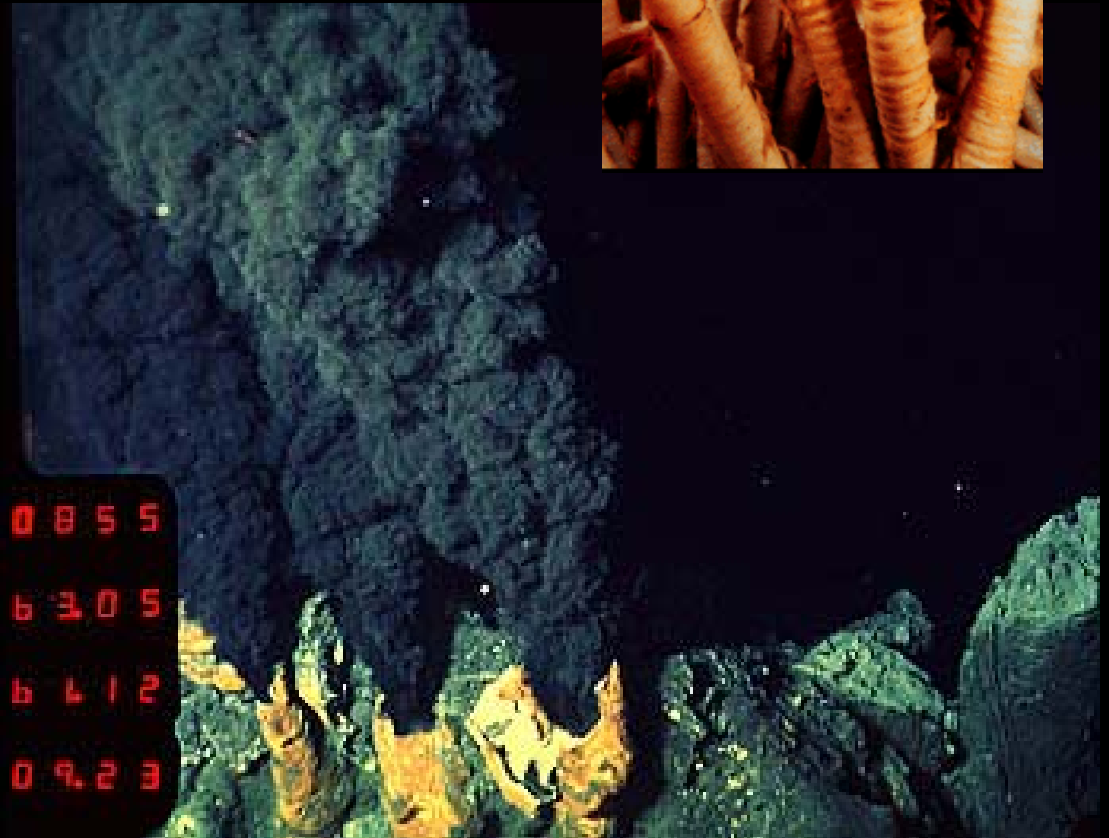


# Ph. Annelida, Cl. Polychaeta

## F. Siboglinidae



vestimentiferan worms

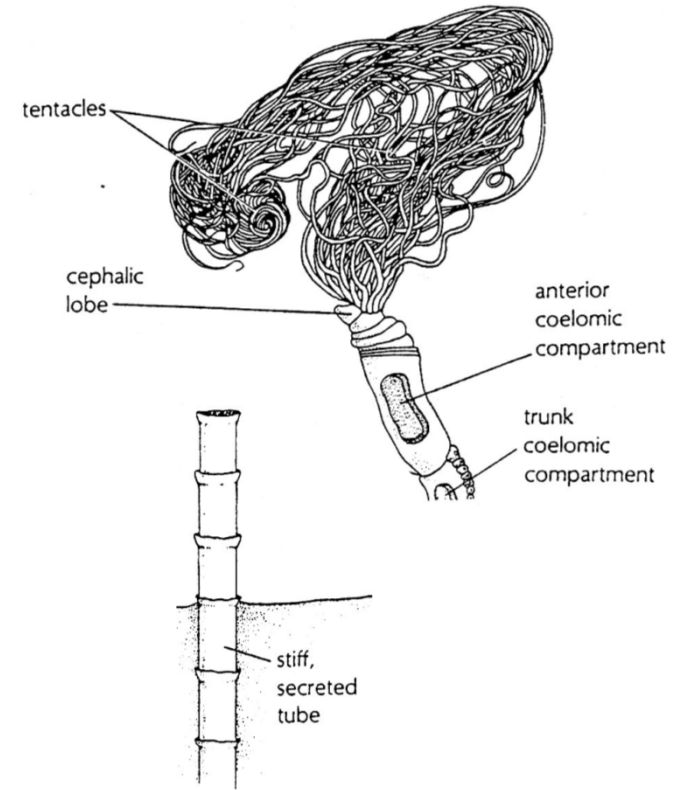
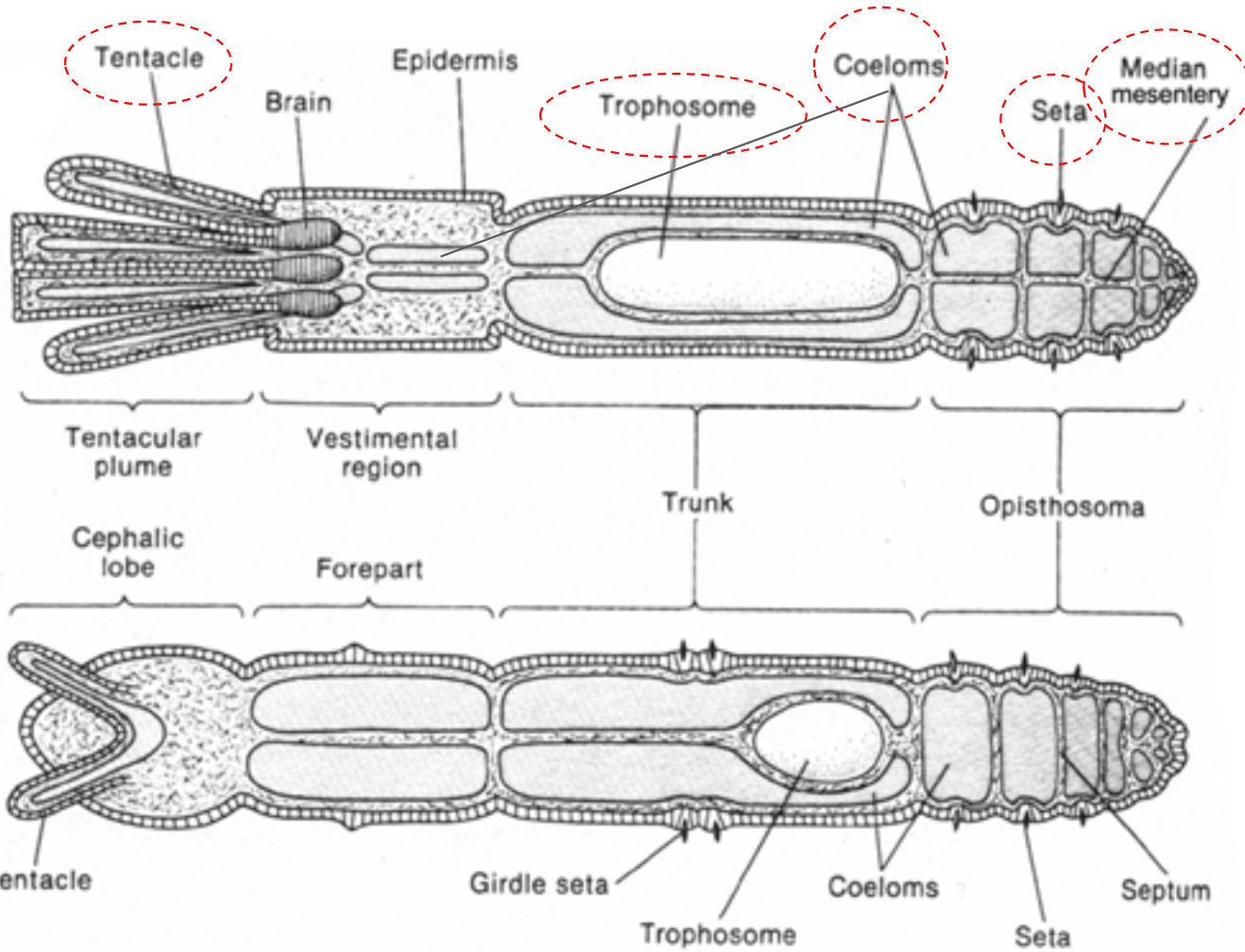


pogonophoran worms

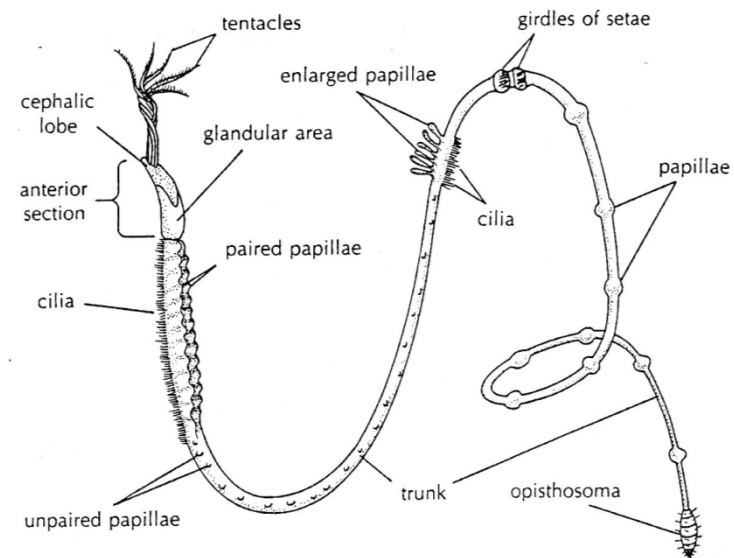
# Ph. Annelida, Cl. Polychaeta

## F. Siboglinidae

vestimentiferans (large gutless worms, live at hydrothermal vents)

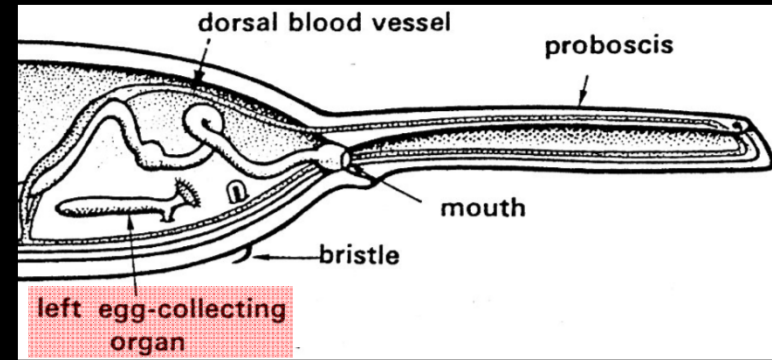


pogonophrans (long thin gutless worms, live in anoxic basins)

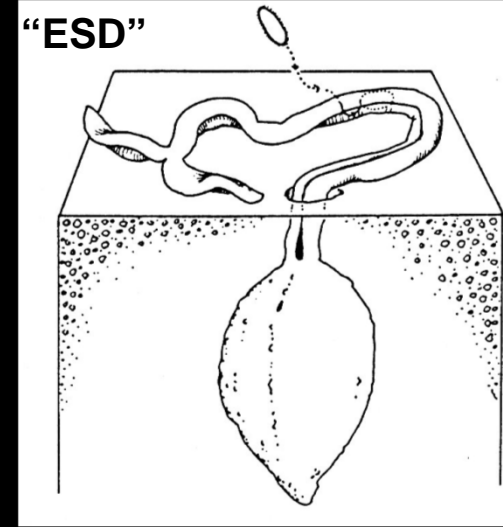


# Ph. Annelida, Cl. Echiura

“spoon worms”



## *Bonellia viridis*



## *Urechis caupo*





# The Sipunculans

“peanut worms”



\* According to Pechenik 6<sup>th</sup> Ed.:  
= Ph. Annelida, Cl. Sipuncula

