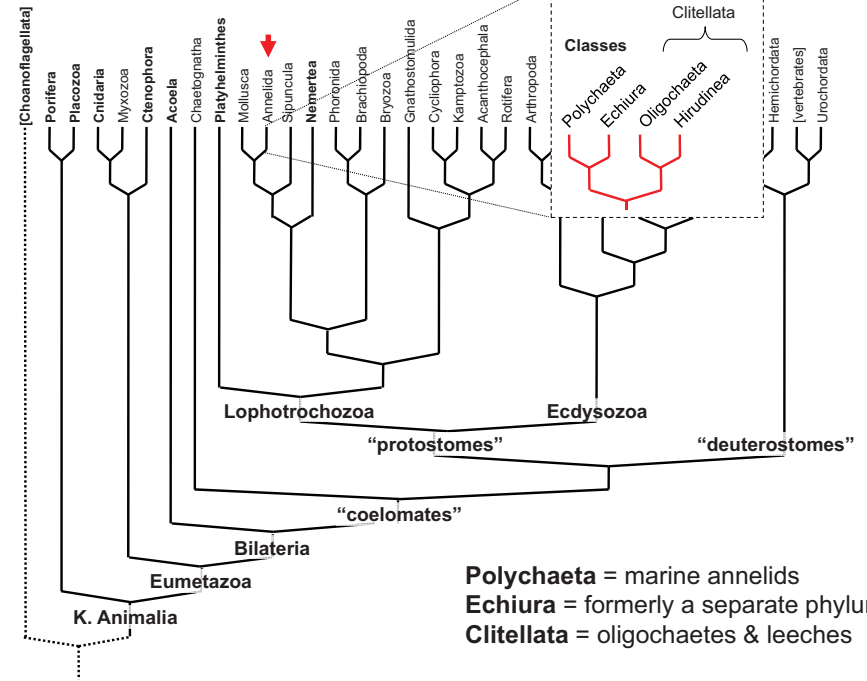
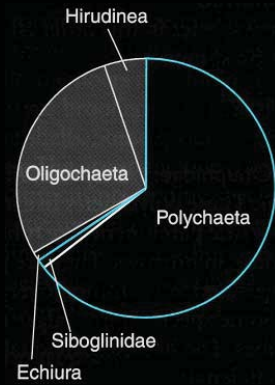


# Ph. Annelida

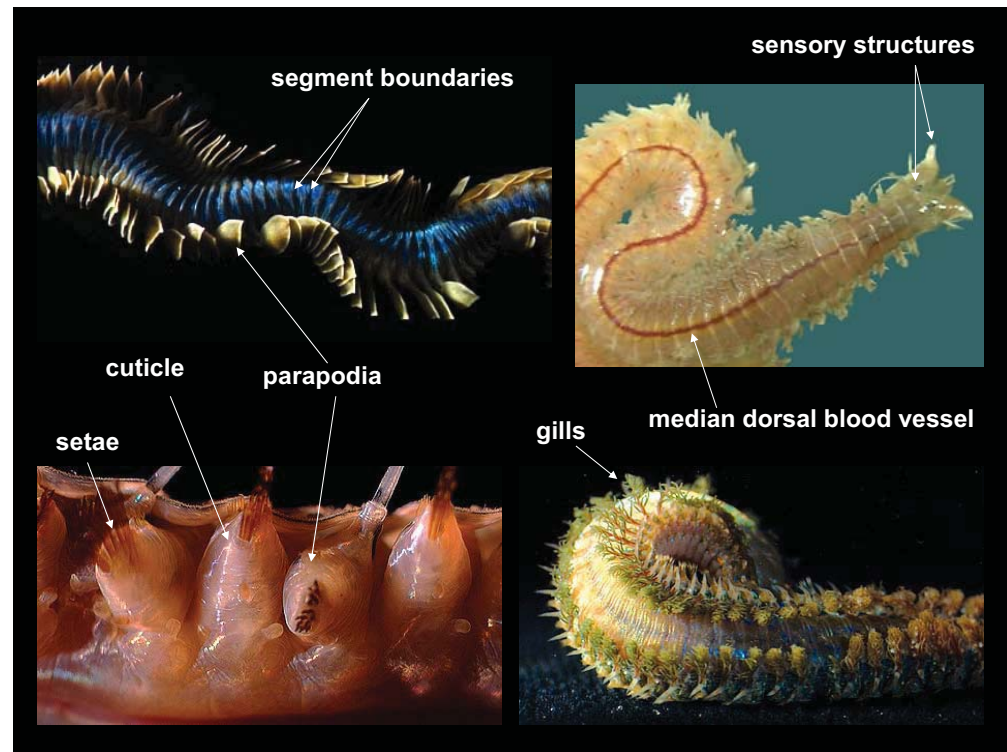
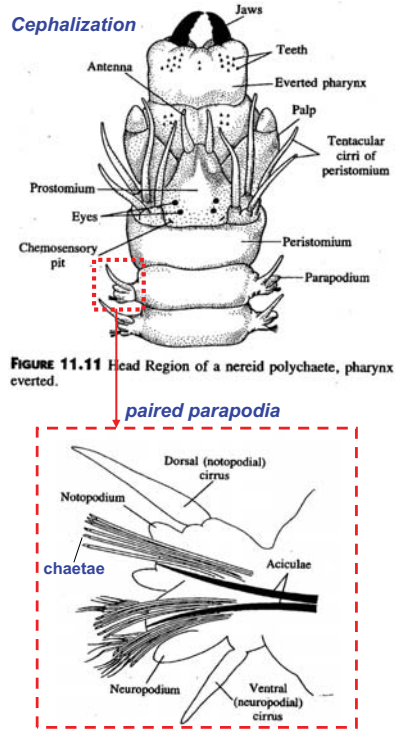
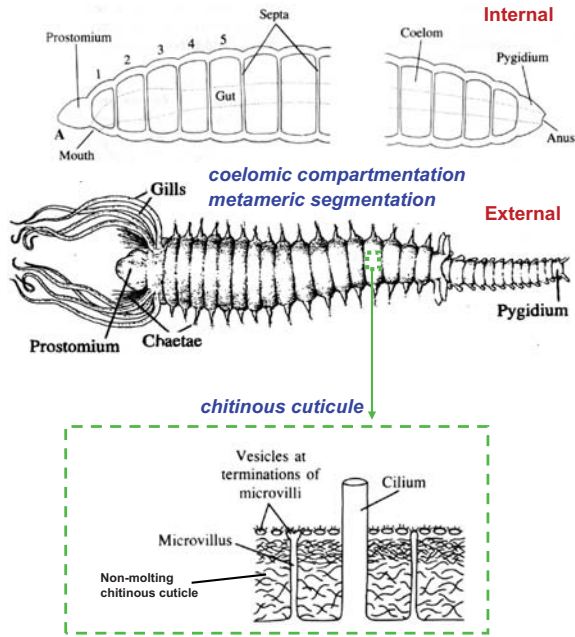
## Cl. Polychaeta



**Theme: segmentation**



### Polychaete: external features



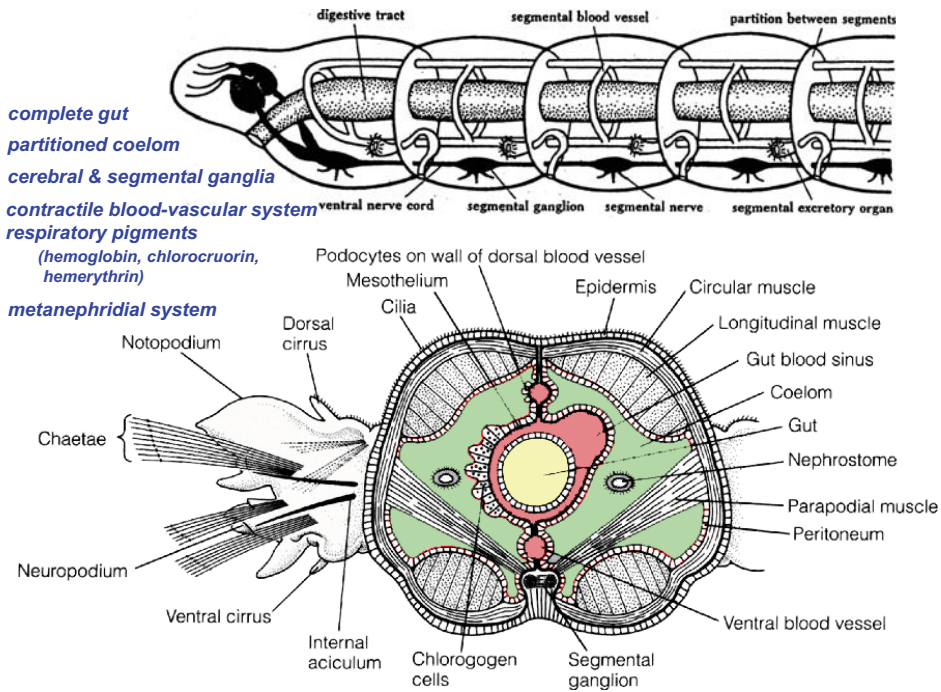
## Polychaete: internal features

complete gut  
partitioned coelom  
cerebral & segmental ganglia

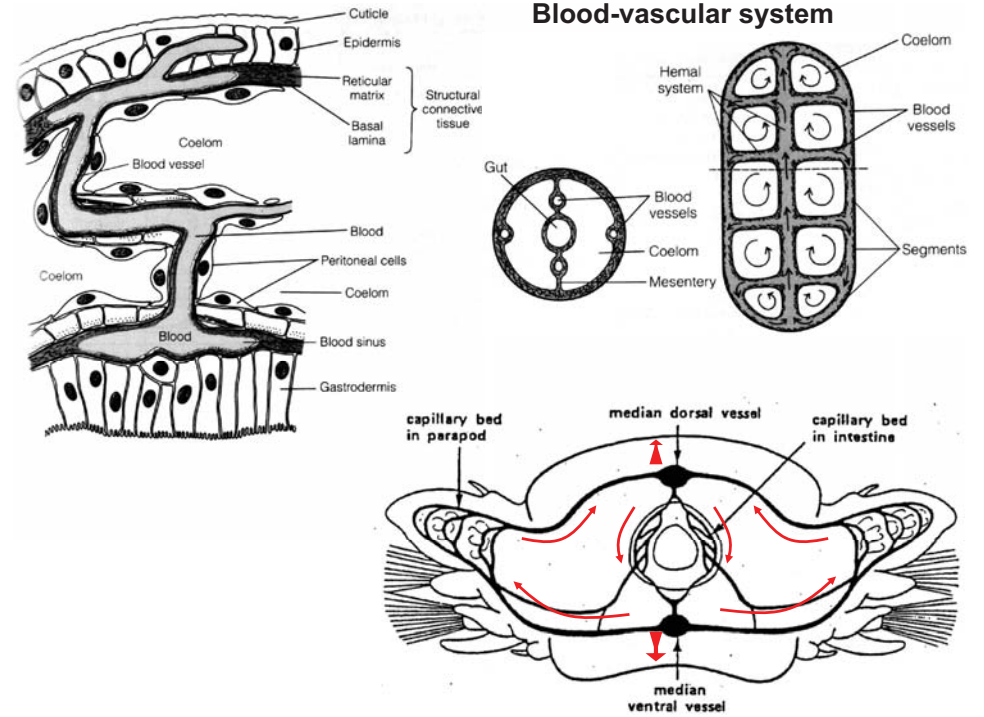
contractile blood-vascular system  
respiratory pigments

(hemoglobin, chlorocruorin, hemerythrin)

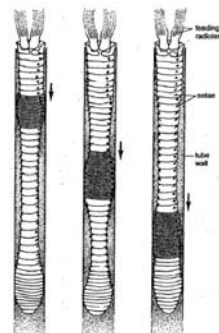
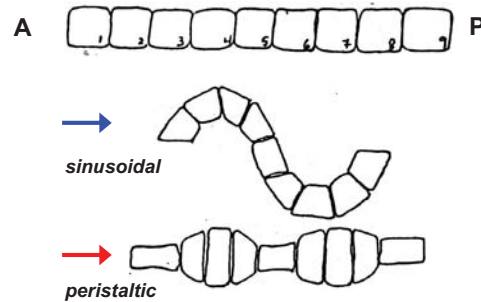
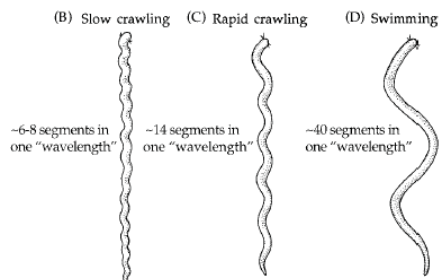
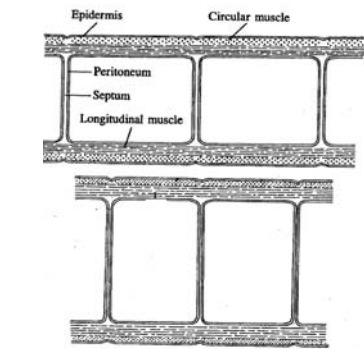
metanephridial system



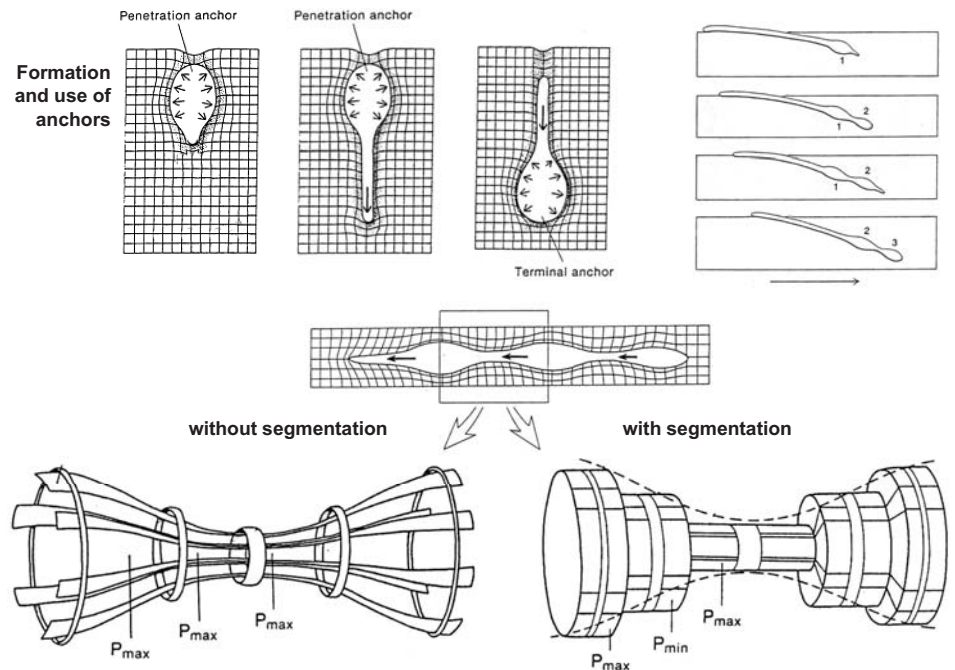
## Blood-vascular system



## Coelom: locomotion



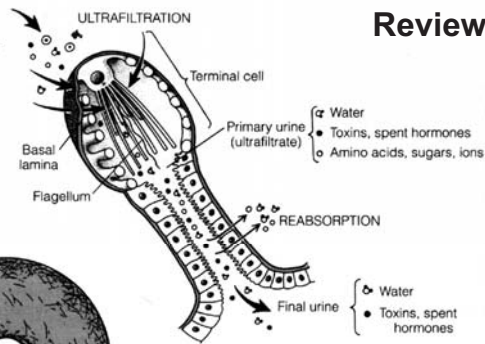
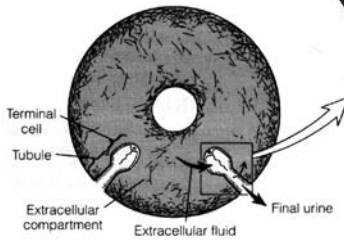
## How do worms burrow?



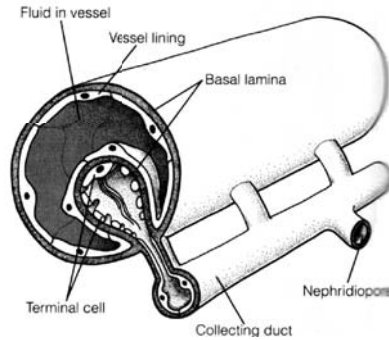
- Extracellular fluid:
- Water
  - Toxins, spent hormones
  - Protein
  - Cell
  - Amino acids, sugars, ions

## Review: protonephridia

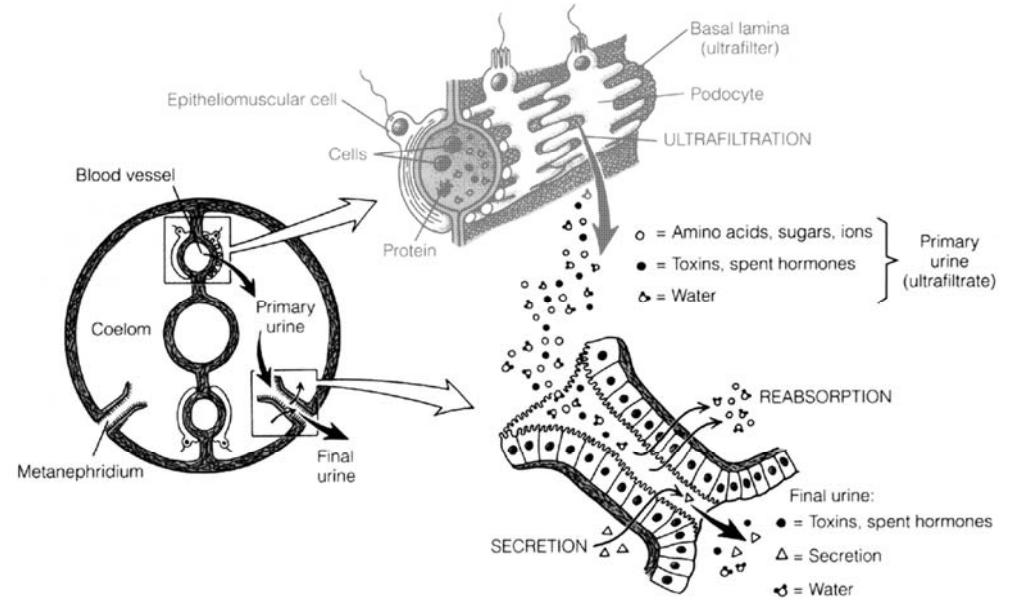
### flatworms



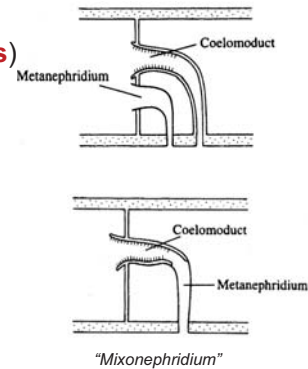
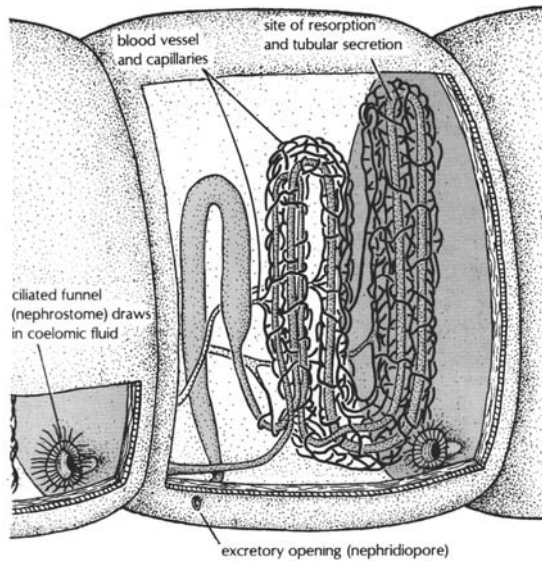
### nemerteans



## Metanephridia (large coelomate organisms)

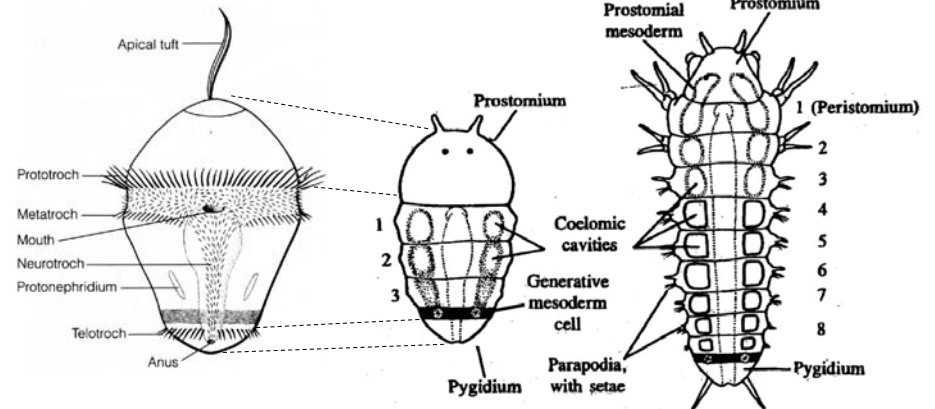


## Metanephridia (large coelomate organisms)



coelomic collection of primary urine  
coelomic gonad

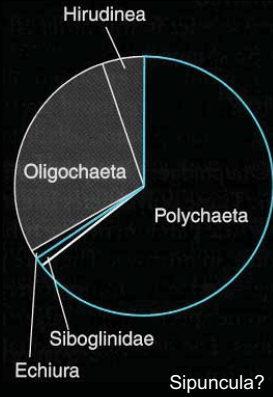
## Larval biology and development



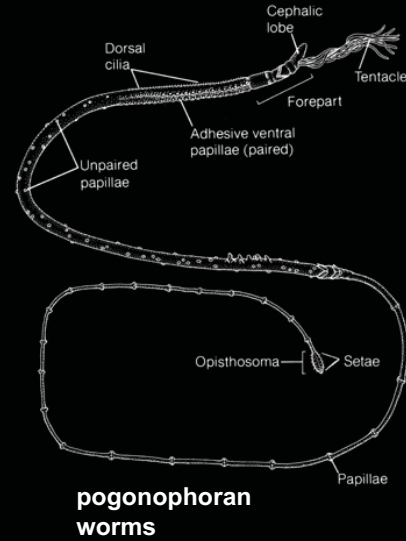
### "Trochophore-type" larva

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

**Ph. Annelida**  
**Cl. Polychaeta**



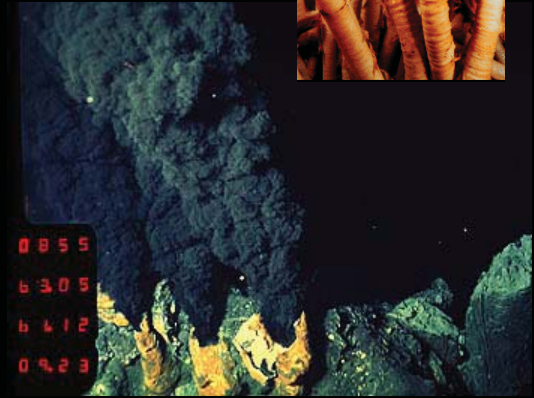
**Ph. Annelida, Cl. Polychaeta**  
**F. Siboglinidae**



vestimentiferan worms

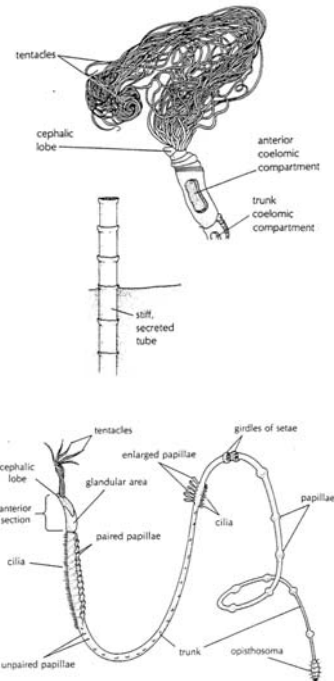
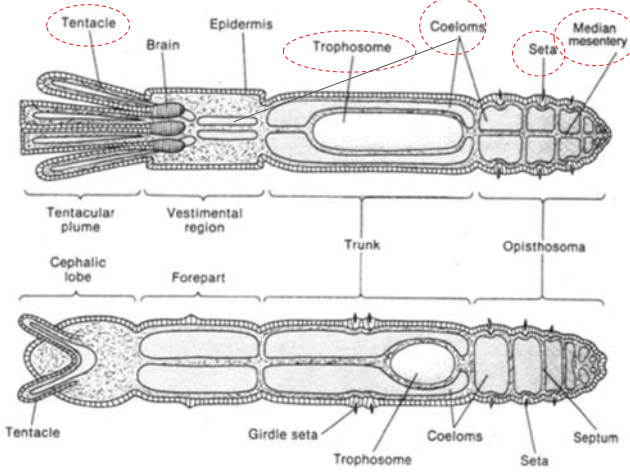


pogonophoran worms



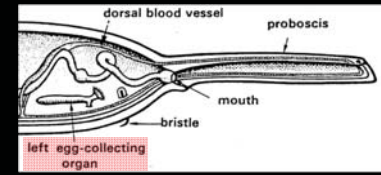
**Ph. Annelida, Cl. Polychaeta**  
**F. Siboglinidae**

vestimentiferans (large gutless worms, live at hydrothermal vents)

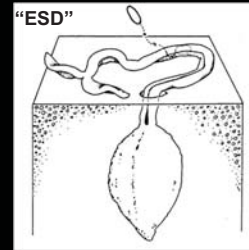


pogonophrans (long thin gutless worms, live in anoxic basins)

**Ph. Annelida, Cl. Echiura**  
**"spoon worms"**



**Bonellia viridis**



**Urechis caupo**



"fat inkeeper worm"

# The Sipunculans

"peanut worms"



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

