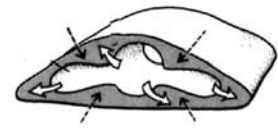


**TRADITIONAL DIVISIONS
 BASED ON BODY CAVITIES**

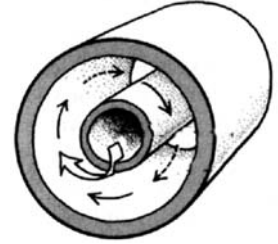
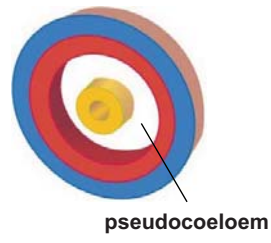
Embryonic tissue layers

Diffusion/circulation

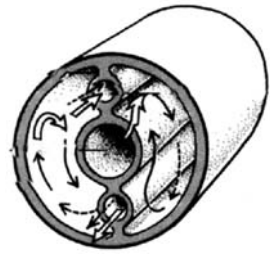
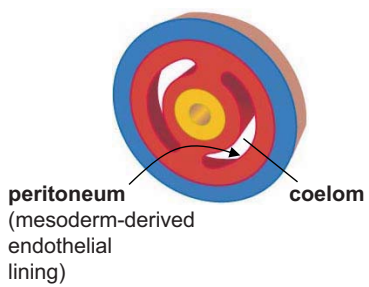
"Acoelomate"
 - Platyhelminthes
 - Nemerteans



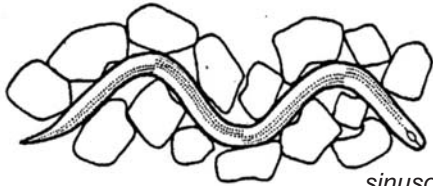
"Pseudo-coelomate"
 - Nematoda
 - Nematomorpha
 - Kinorhyncha
 - Loricifera
 - Priapula
 - Tardigrada
 - Gastrotricha
 - Acanthocephala
 - Cycliophora
 - Gnathostomulida
 - Rotifera



Coelomate
 - Mollusca - Arthropoda
 - Annelida - Onychophora
 - Sipuncula - Tardigrada
 - Phoronida - Echinodermata
 - Brachiopoda - Hemichordata
 - Bryozoa - Chordata

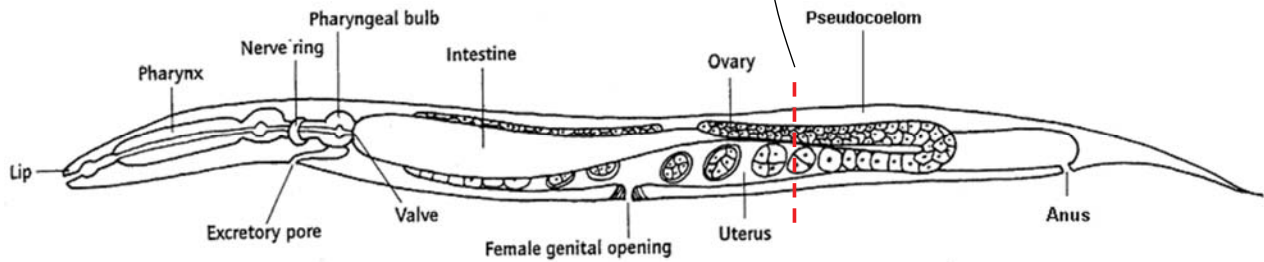
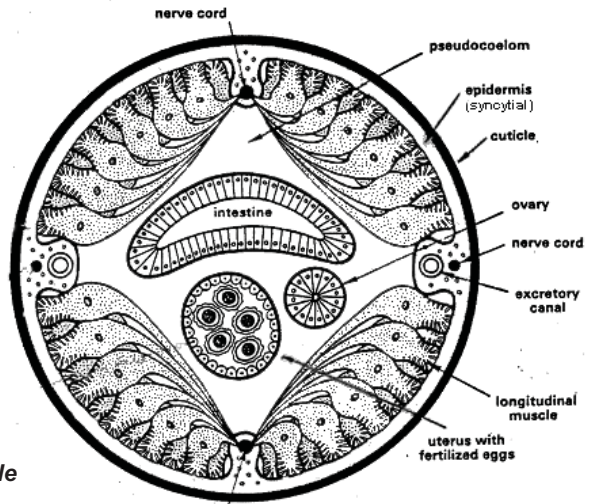


Ph. Nematoda

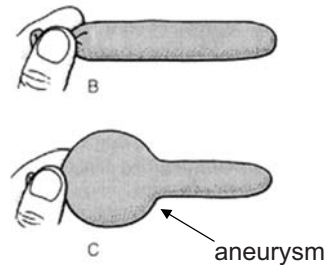
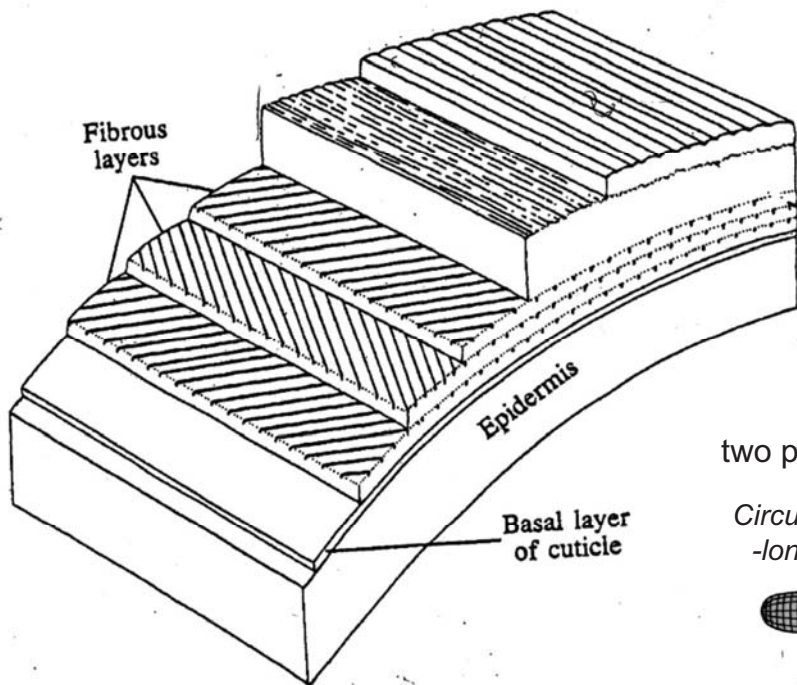


sinusoidal locomotion

- pseudocoelom
- high internal pressure
- molted chitinous cuticle
- syncytial epidermis
- longitudinal muscle only
- muscle projections to nerves



Cuticle = chitin + reinforcing collagen fibers



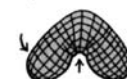
Collagen fibers:
two possible orthogonal arrangements

Circumferential-longitudinal

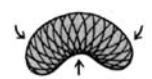
Helical



At rest



Bend



▶ allows for smooth curvature

Hypotheses for the evolution of body cavities

H₁: Evolution in sequence

H₂: Secondary loss
(small body size?)

“Acoelomate”

- Platyhelminthes
- Nemerteans

“Pseudo-coelomate”

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- Kinorhyncha
- Loricifera
- Priapula
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Coelomate

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- Sipuncula
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- Bryozoa
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