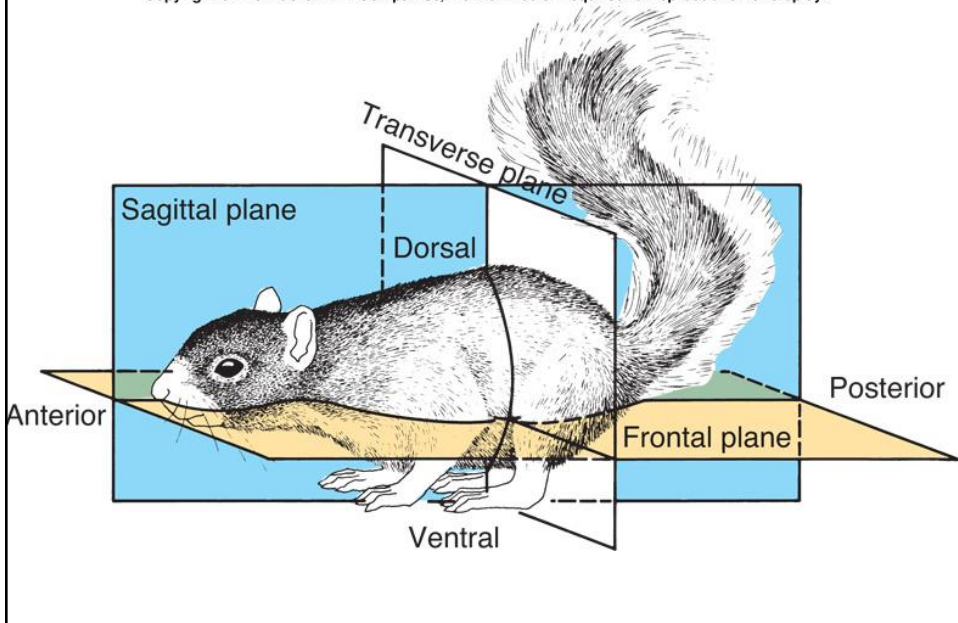


Chapter 3

Architectural Pattern of an Animal

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Unicellular

Multicellular

Symmetry equal or same size & shape of parts on opposite sides

1) spherical mirrored halves when plane cuts through center
common in unicellular
suited for floating & rolling

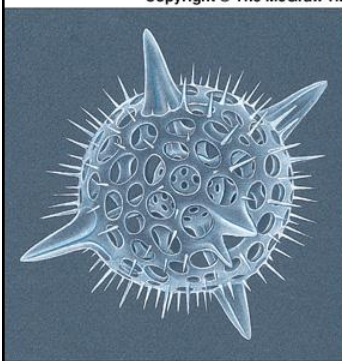
sessile
floating
feeble swimmers

2) radial mirrored halves when > two planes cuts through longitudinal axis
tubular, vase, bowl shaped

3) biradial mirrored halves when two planes cuts through longitudinal axis
pair of appendages restricts the two planes e.g. Ctenophora

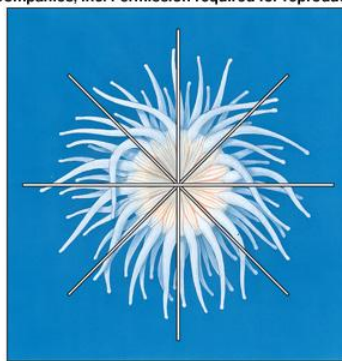
4) bilateral mirrored halves when plane cuts through sagittally
anterior-posterior axis → **cephalization** → **forward direction**
dorsal-ventral axis → **sensory structures**
left-right halves

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Spherical symmetry

some unicellular Protista



Radial symmetry

Porifera
Cnidaria

Pentamerous radial symmetry

Echinodermata

Biradial symmetry

Ctenophora



Bilateral symmetry

Platyhelminthes
Nemertea
Nematoda
Annelida
Mollusca
Arthropoda
Echinodermata*
Chordata

* Only class: Holothuroidea

Germ layers

ectoderm, endoderm & mesoderm

Body Cavities

acoelom no coelom

pseudocoelom → cavity but not completely surrounded by mesoderm

coelom “true” internal fluid-filled body cavity completely surrounded by mesoderm

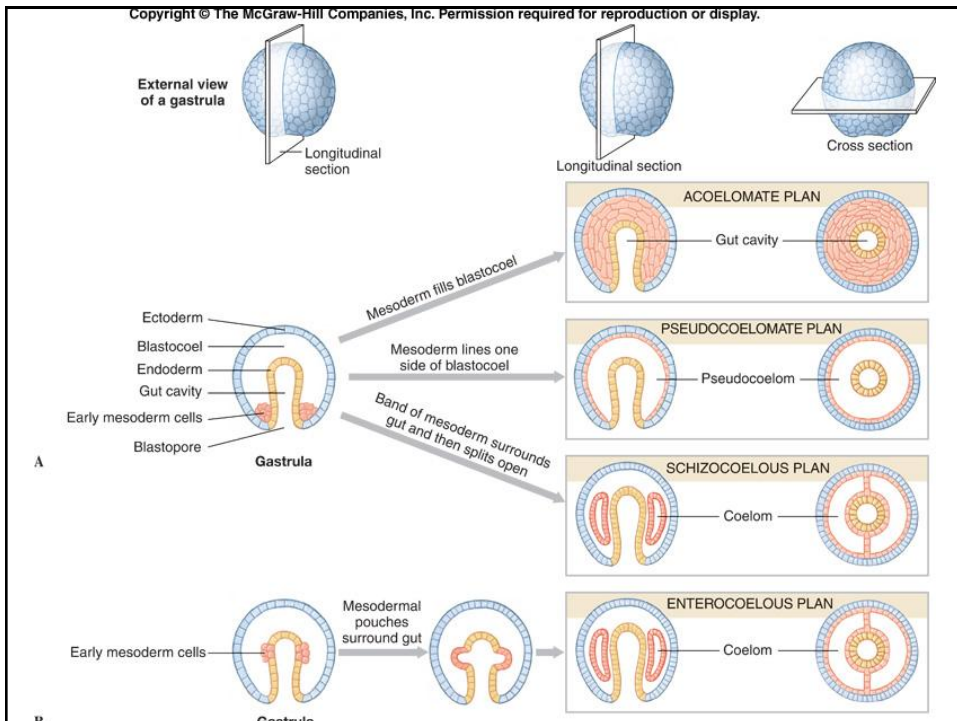
- 1) space to accommodate specialized organs e.g. excretory, reproductive
- 2) hydrostatic pressure for locomotion & burrowing
- 3) surrounds & protects gut

Segmentation serial repetition of similar body segments

Annelida

Arthropoda

Chordata



Embryogenesis (embryo development)

zygote: fertilized egg

blastula: hollow ball of **ectoderm cells** early embryonic stage

gastrula: late embryonic stage when cells begin to divide inwards
(**invagination** → **endoderm** = gut)

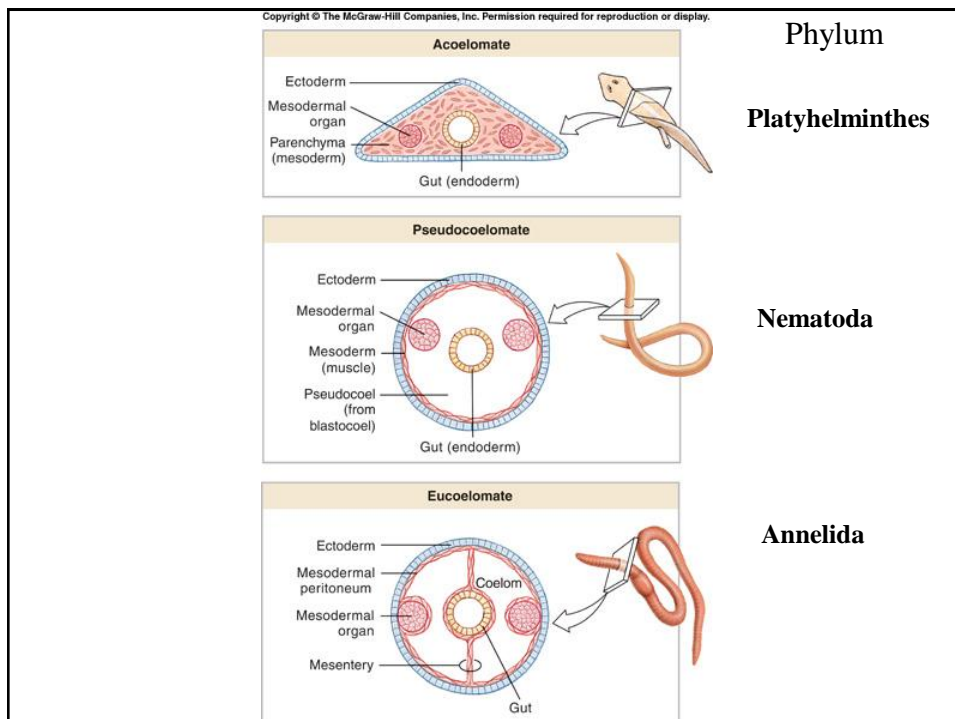
blastopore = opening where **invagination** occurs

Protostome: blastopore = mouth

Deuterostome: blastopore = anus

mesoderm:

- 1) **evagination** of endodermal cells = **enterocoelous** coelom formation
- 2) cell dividing at blastopore = **schizocoelous** coelom formation



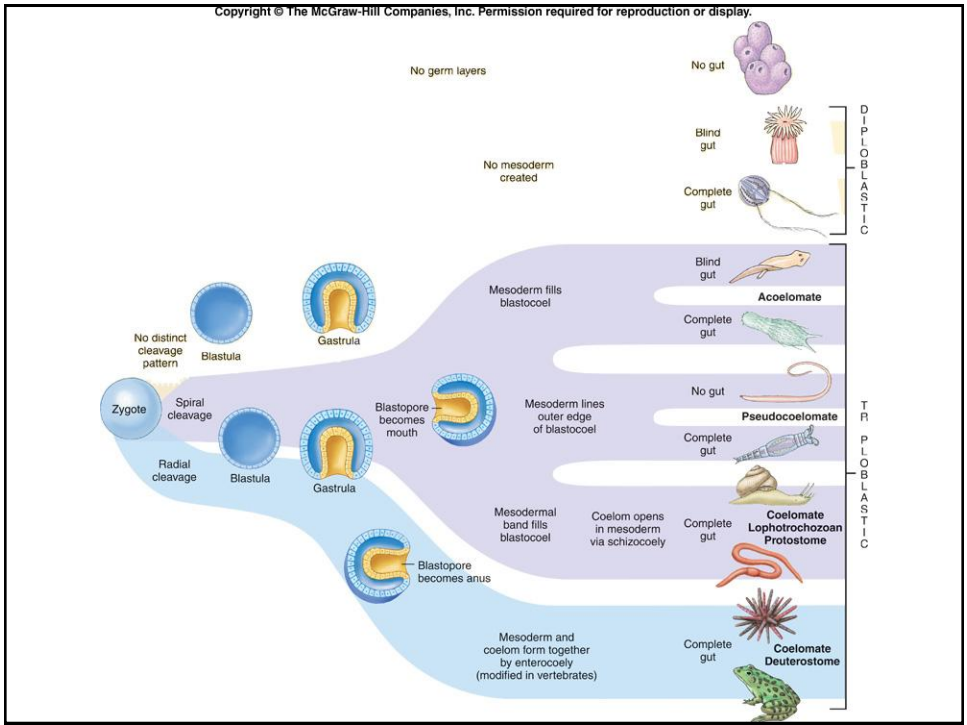
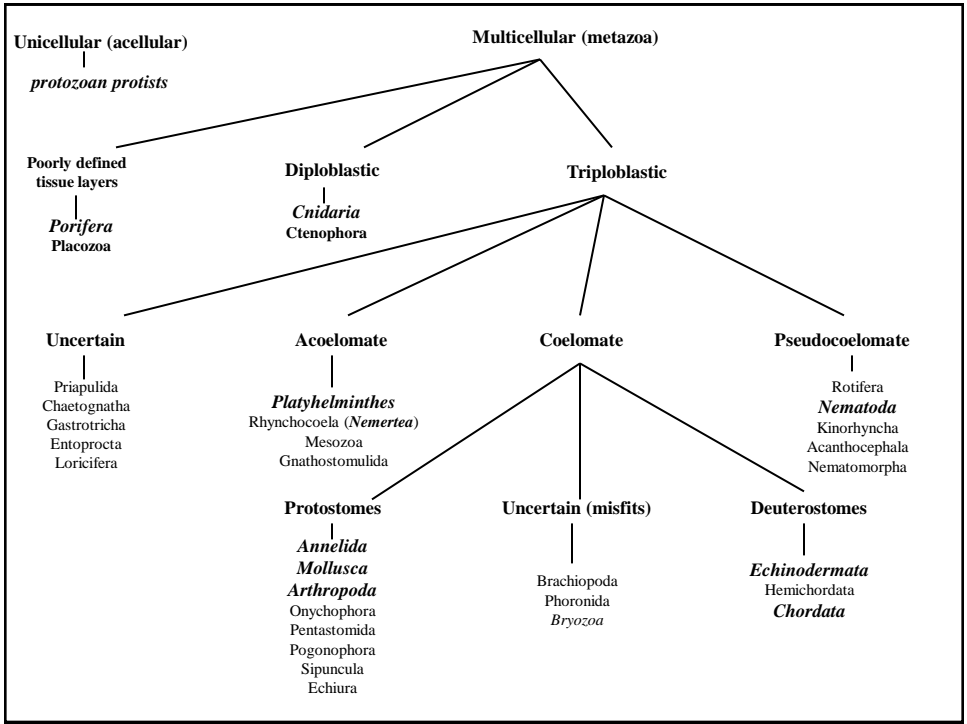
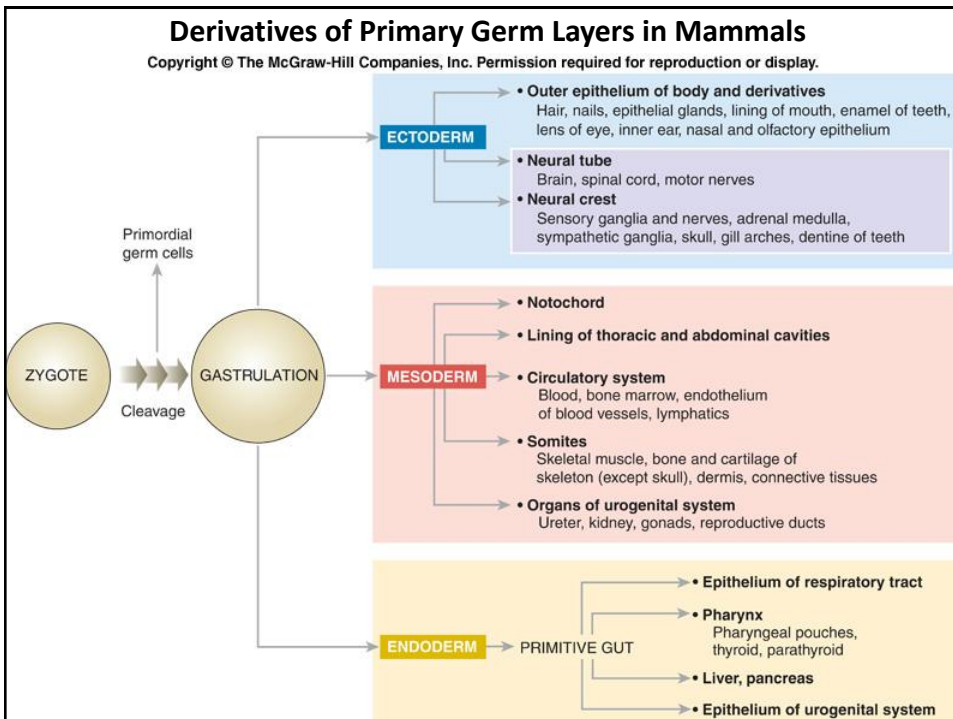
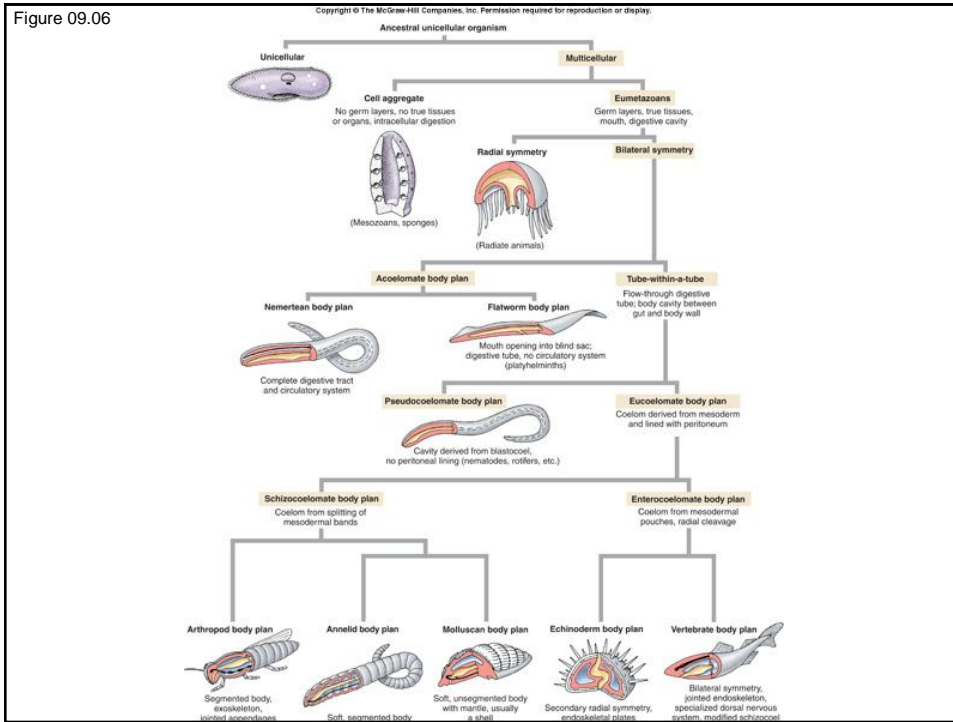


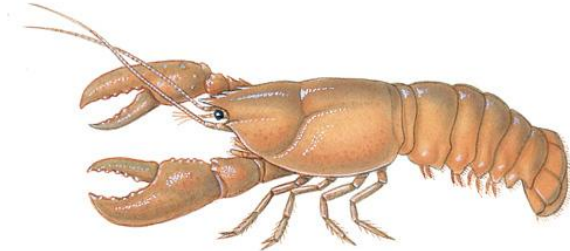
Figure 09.06



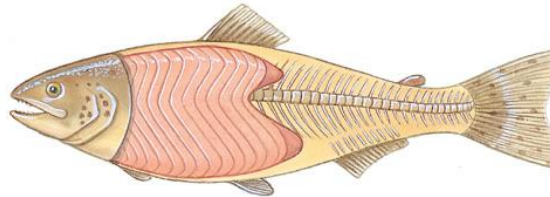
Segmentation in 3 phyla



Annelida



Arthropoda



Chordata



Phylum: Cnidaria (soft corals)
radial symmetry



Phylum: Ctenophora (Comb jellyfish) biradial symmetry