METAZOON FİLUMLARI:

Vücut Simetrileri -1. Radial Simetri - Coelenterata
- Ctenophora

2. Bilateral Simetri – Platyhelminthes, Nemertini, Nematoda, Rotifera, Annelida, Mollusca, Arthrapoda,

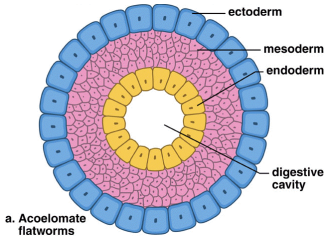
Hücrelerin Organizasyon Düzeyleri –

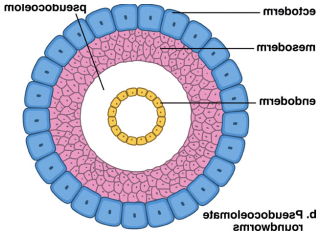
1 . Hücre düzeyinde : Porifera

2. Doku düzeyinde : Coelenterata, Ctenophora

3. Organ-Sistem düzeyinde : Platyhelminthes, Nemertini, Nematoda, Rotifera, Annelida, Mollusca, Arthrapoda,

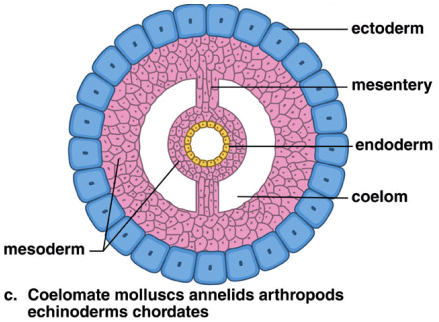
Vücut Boşlukları – 1. Aceolomata – Platyhelminthes, Nemertini





2. Pseudocoelomata – Nematoda, Rotifera

3. Euceolomata – Annelida, Mollusca, Arthrapoda, Lophophora, Echinodermata, Chordata



Euceolomat Embriyolojisi :

1. **Protostomia – Annelida, Mollusca, Arthrapoda**

2. **Deuterostomia – Echinodermata, Chordata, Vertebrata**

Segmentasyon Tipi :

1. **Protostomia - Spiral segmentasyon, determinate (belirleyici)**

2. **Deuterostomia – Radial segmentasyon, indeterminate (elirleyici olmayan)**

Ağız oluşumu :

1. **Protostomia – Ağız blastopordan oluşur**

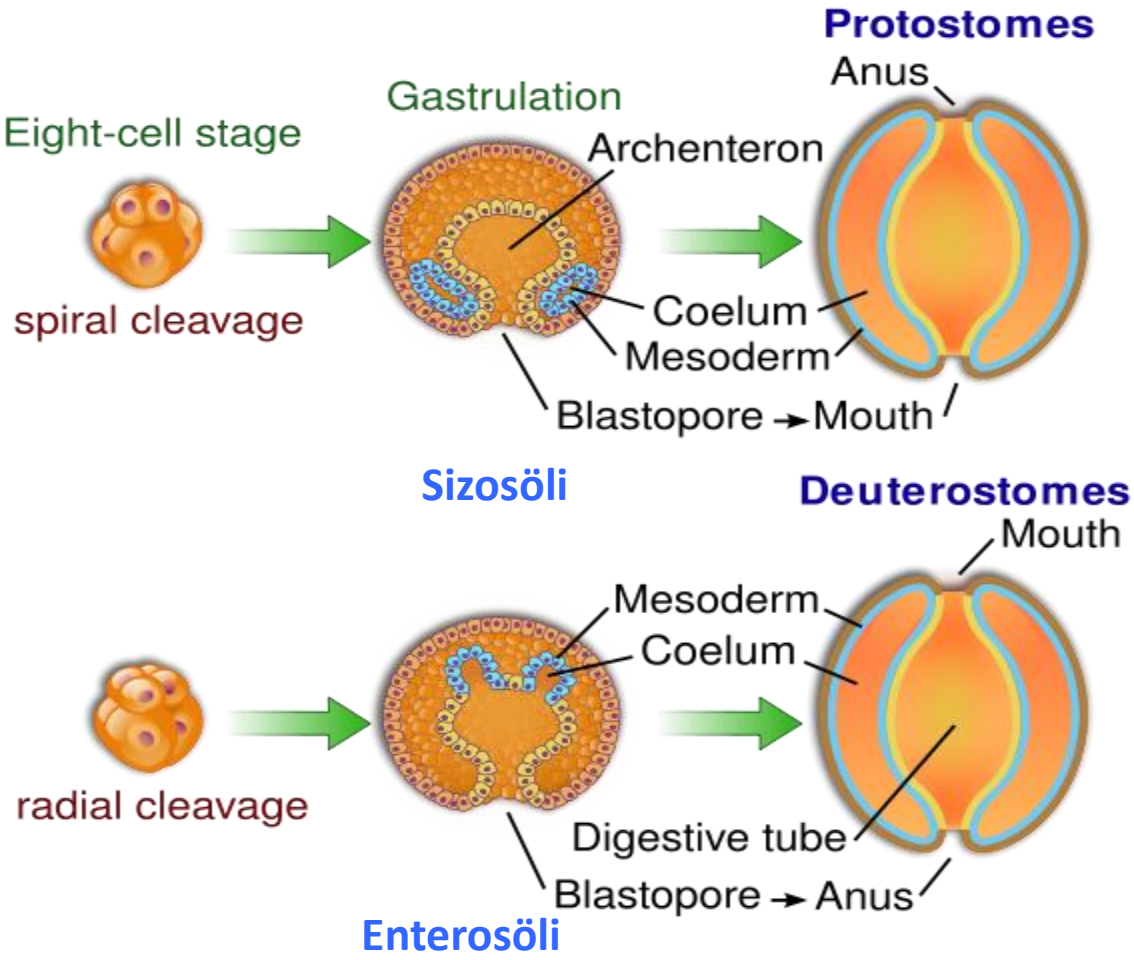
2. **Deuterostomia – Blastopordan anüs oluşur, ağız blastoporun karşı tarafında oluşur**

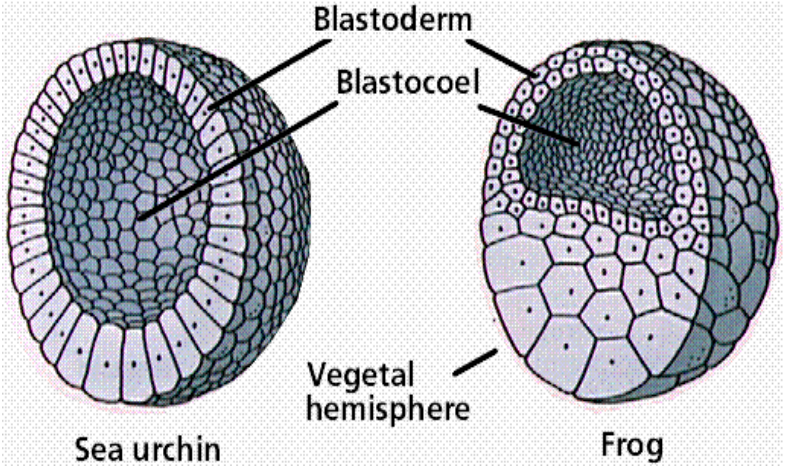
Mezoderm ve Sölomun Orijini :

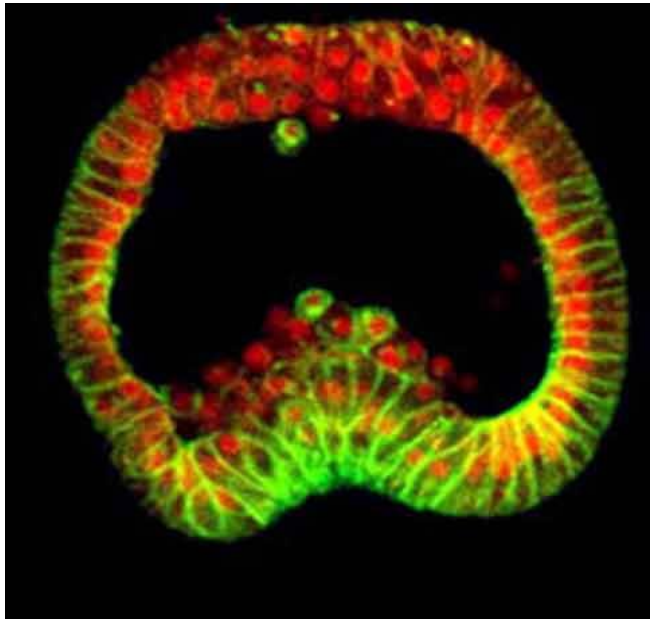
1. **Protostomia– Şizosöli (mezodermal olarak belirlenmiş ve blastosöle atılan tek bir hücreden oluşur. Bu hücre iki hücre oluştırmak üzere bölünür. Bunlardan her biri embriyonun yan tarafları boyunca mezodermal doku kitlesine farklılaşır, sonra her mezodermal kitlenin içinde bir yarık meydana gelir. Yarık boşluk oluşturacak şekilde genişler ve protostomia sölomunu yapar). Şizosölomat**

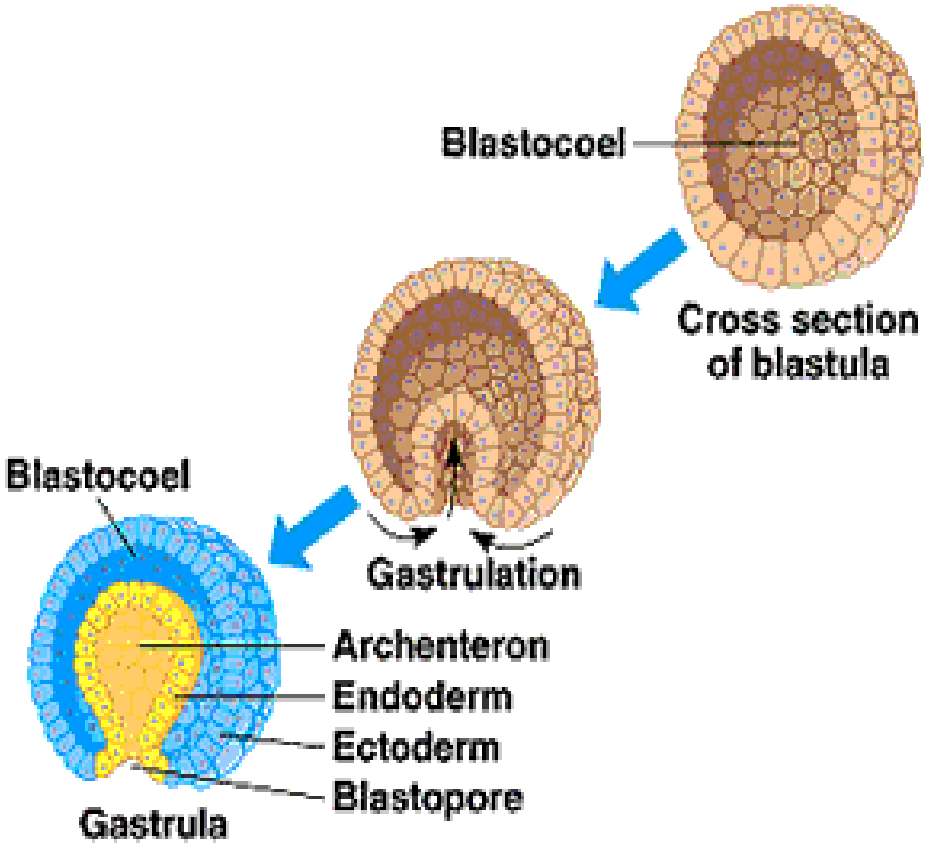
2. **Deuterostomia – Enterosöli (arkenteronun yanlarında bir çift çıkıntı gelişir. Primitif barsağın bu çıkıntıları genişler ve lateral keseler halinde barsaktan ayrılırlar. Kesenin duvarları organizmanın mezodermini temsil ederken kese boşluğu deuterostom sölomunu yapar) - Enterosölomat**

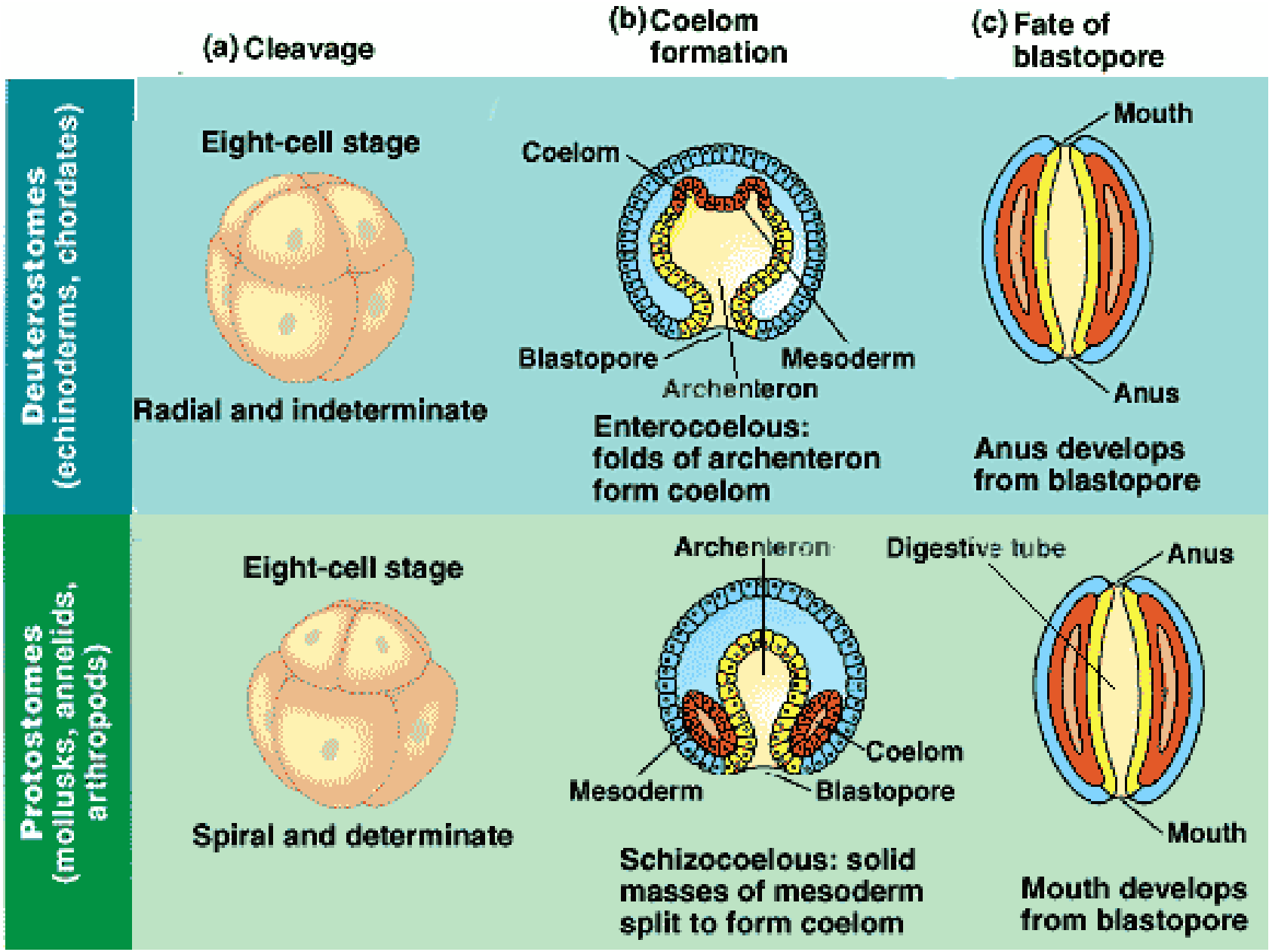
Protostomia-Deuterostomia

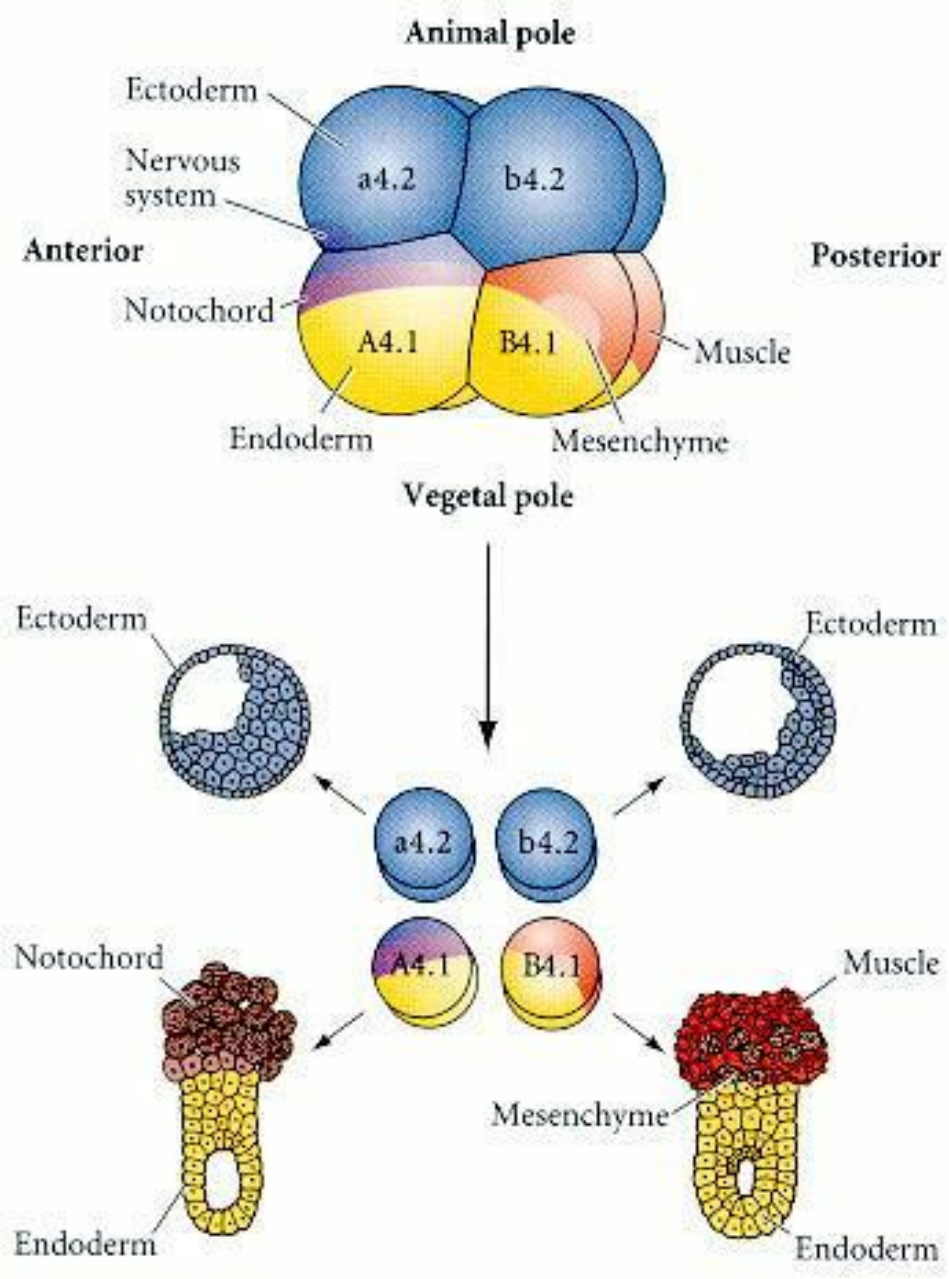



Blastoderm
Blastocoel
Vegetal hemisphere
Sea urchin
Frog

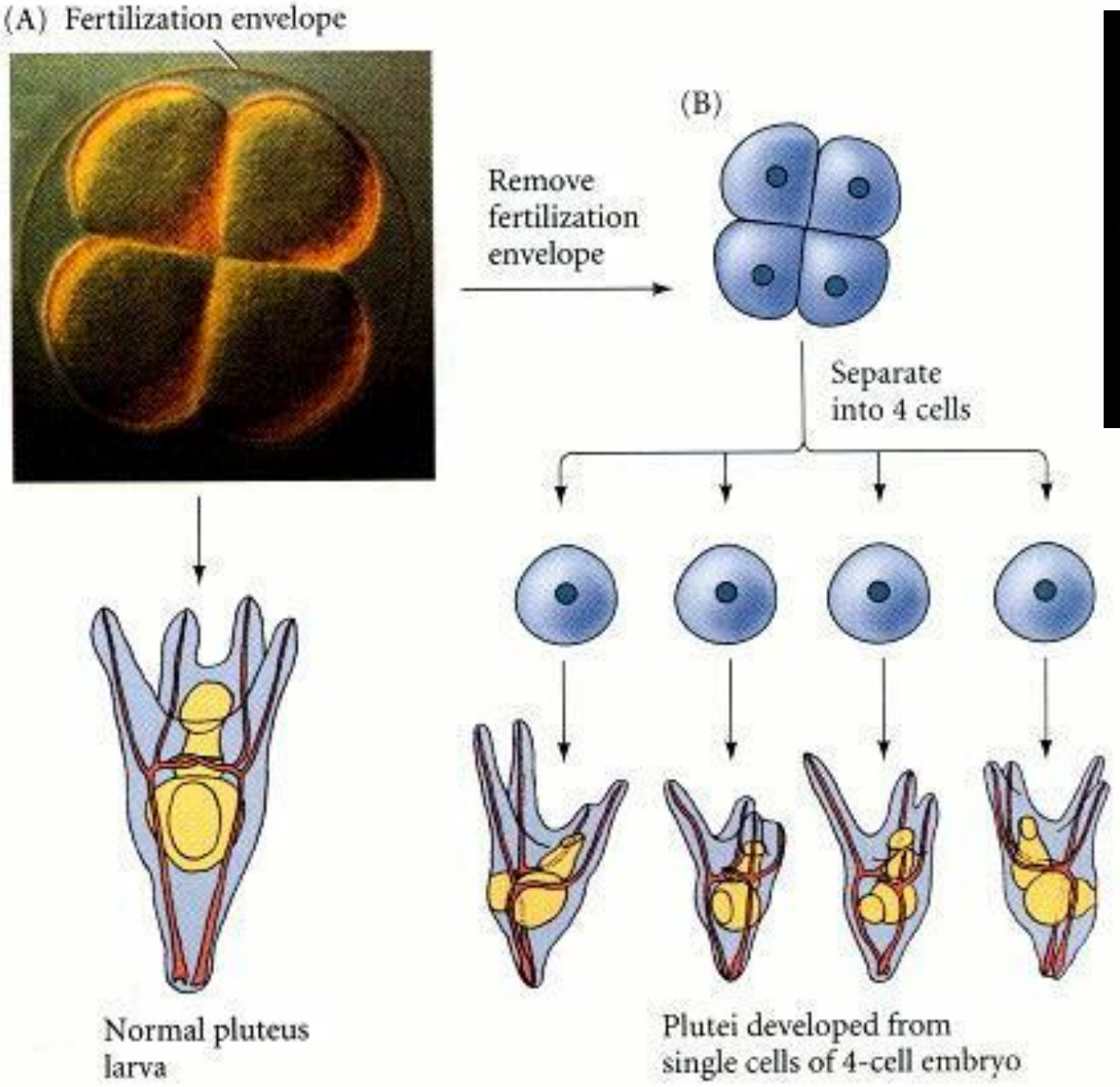


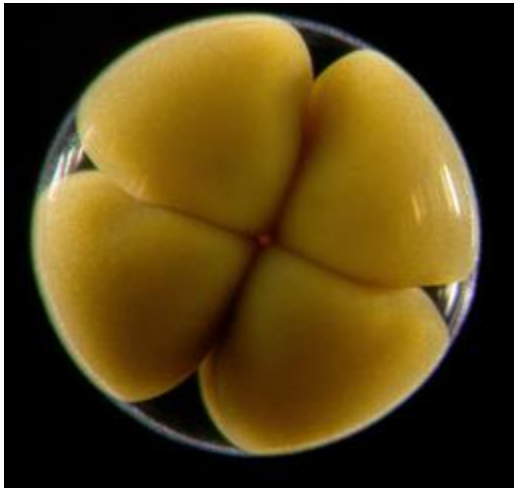

Blastocoel
Cross section of blastula
Blastocoel
Gastrulation
Archenteron
Endoderm
Ectoderm
Blastopore
Gastrula

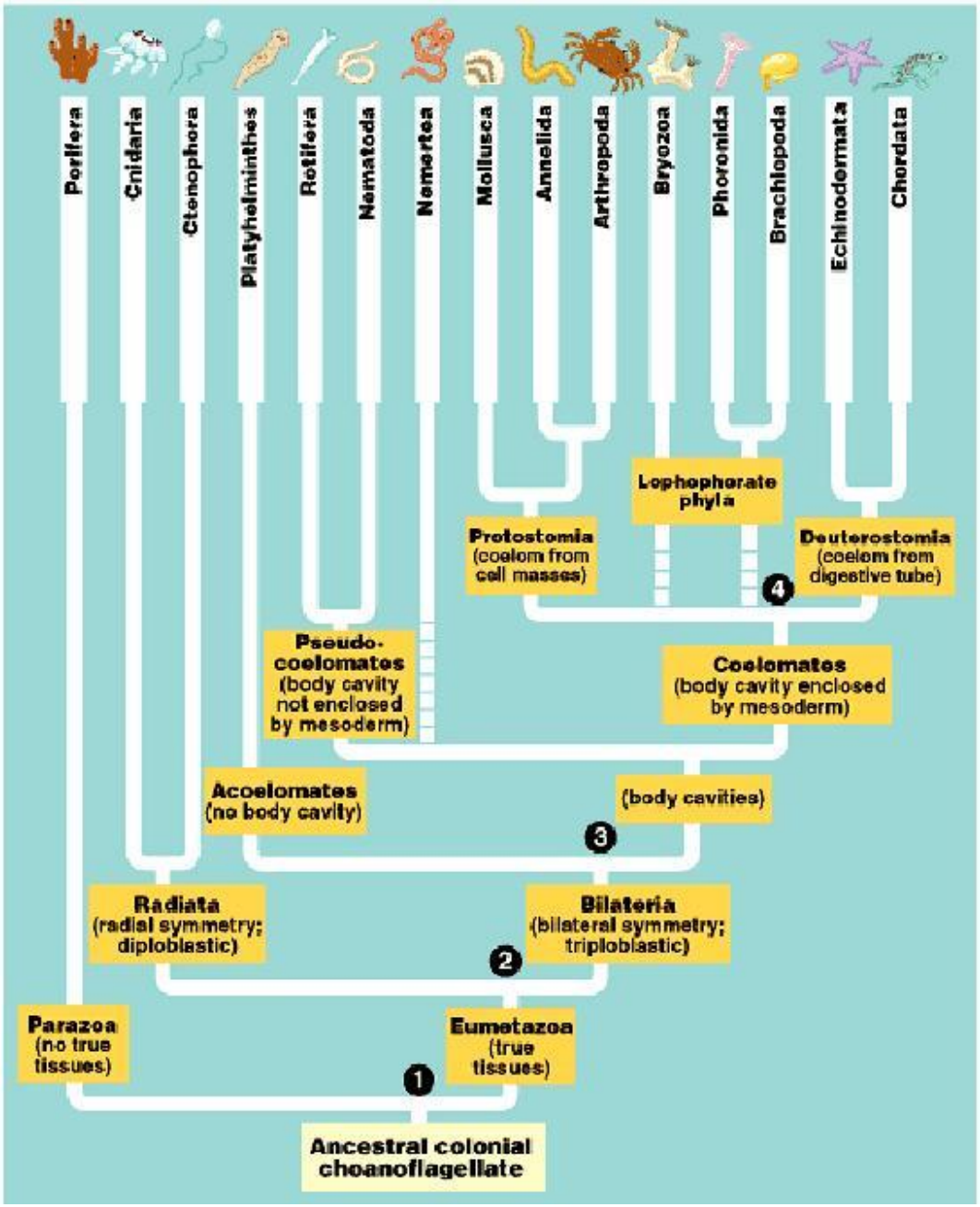

(a) Cleavage
(b) Coelom formation
(c) Fate of blastopore
Deuterostomes (echinoderms, chordates)
Eight-cell stage
Radial and indeterminate
Coelom
Blastopore
Mesoderm
Archenteron
Enterocoelous: folds of archenteron form coelom
Mouth
Anus
Anus develops from blastopore
Protostomes (mollusks, annelids, arthropods)
Eight-cell stage
Spiral and determinate
Archenteron
Coelom
Mesoderm
Blastopore
Schizocoelous: solid masses of mesoderm split to form coelom
Digestive tube
Anus
Mouth
Mouth develops from blastopore

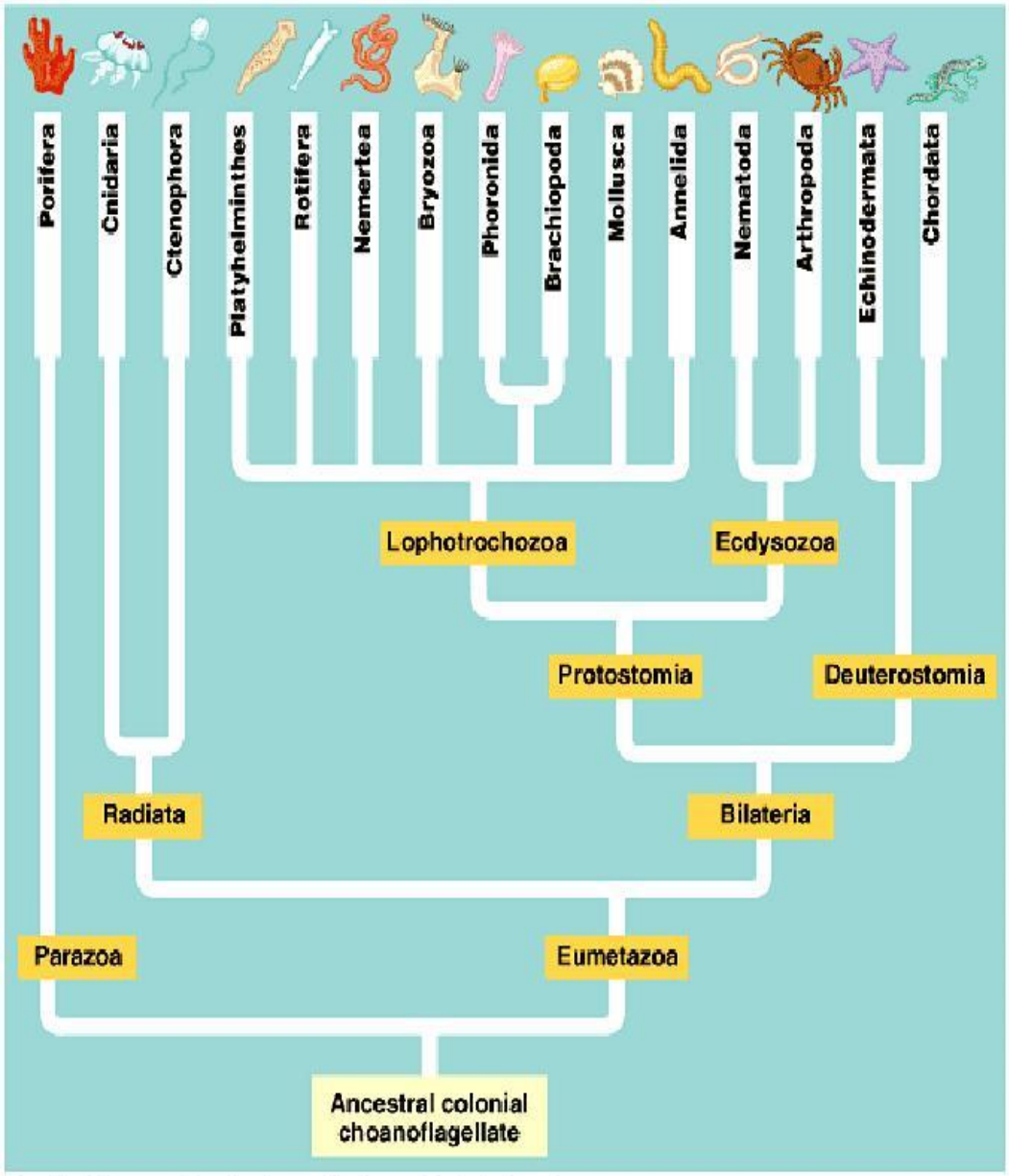


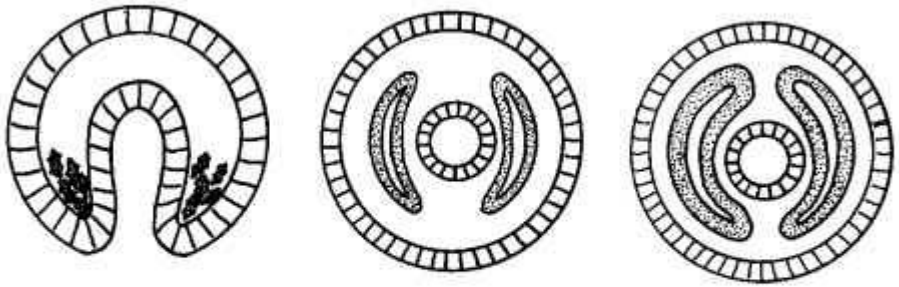
Autonomous specification in the early tunicate embryo. When the four blastomere pairs of the 8-cell embryo are dissociated, each forms structures that it would have formed if it had remained in the embryo. (The fate map of the tunicate shows that the left and right sides produce identical cell lineages.) (After Reverberi and Minganti 1946.)


(A) Fertilization envelope
(B)
Remove fertilization envelope
Separate into 4 cells
Normal pluteus larva
Plutei developed from single cells of 4-cell embryo




Porifera
Cnidaria
Ctenophora
Platyhelminthes
Rotifera
Nematoda
Nemertea
Mollusca
Annelida
Arthropoda
Bryozoa
Phoronida
Brachiopoda
Echinodermata
Chordata
Lophophorate phyla
Protostomia (coelom from cell masses)
Deuterostomia (coelom from digestive tube)
4
Pseudo-coelomates (body cavity not enclosed by mesoderm)
Coelomates (body cavity enclosed by mesoderm)
Acoelomates (no body cavity)
(body cavities)
3
Radiata (radial symmetry; diploblastic)
Bilateria (bilateral symmetry; triploblastic)
2
Parazoa (no true tissues)
Eumetazoa (true tissues)
1
Ancestral colonial choanoflagellate





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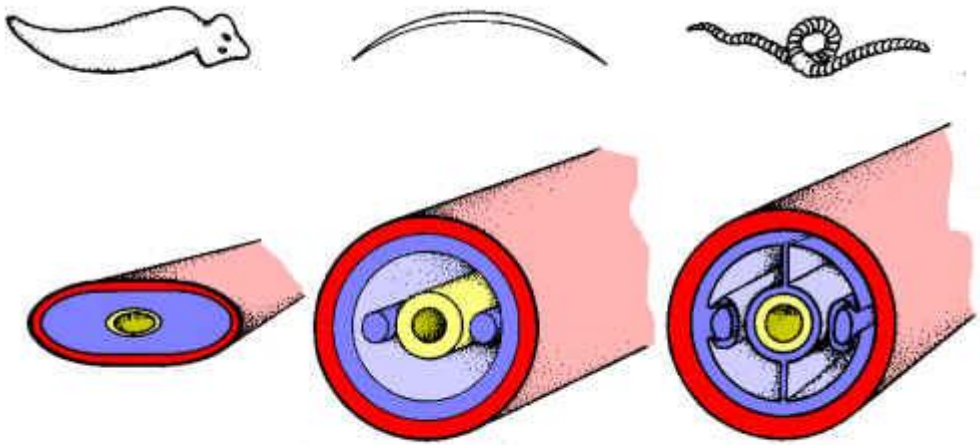

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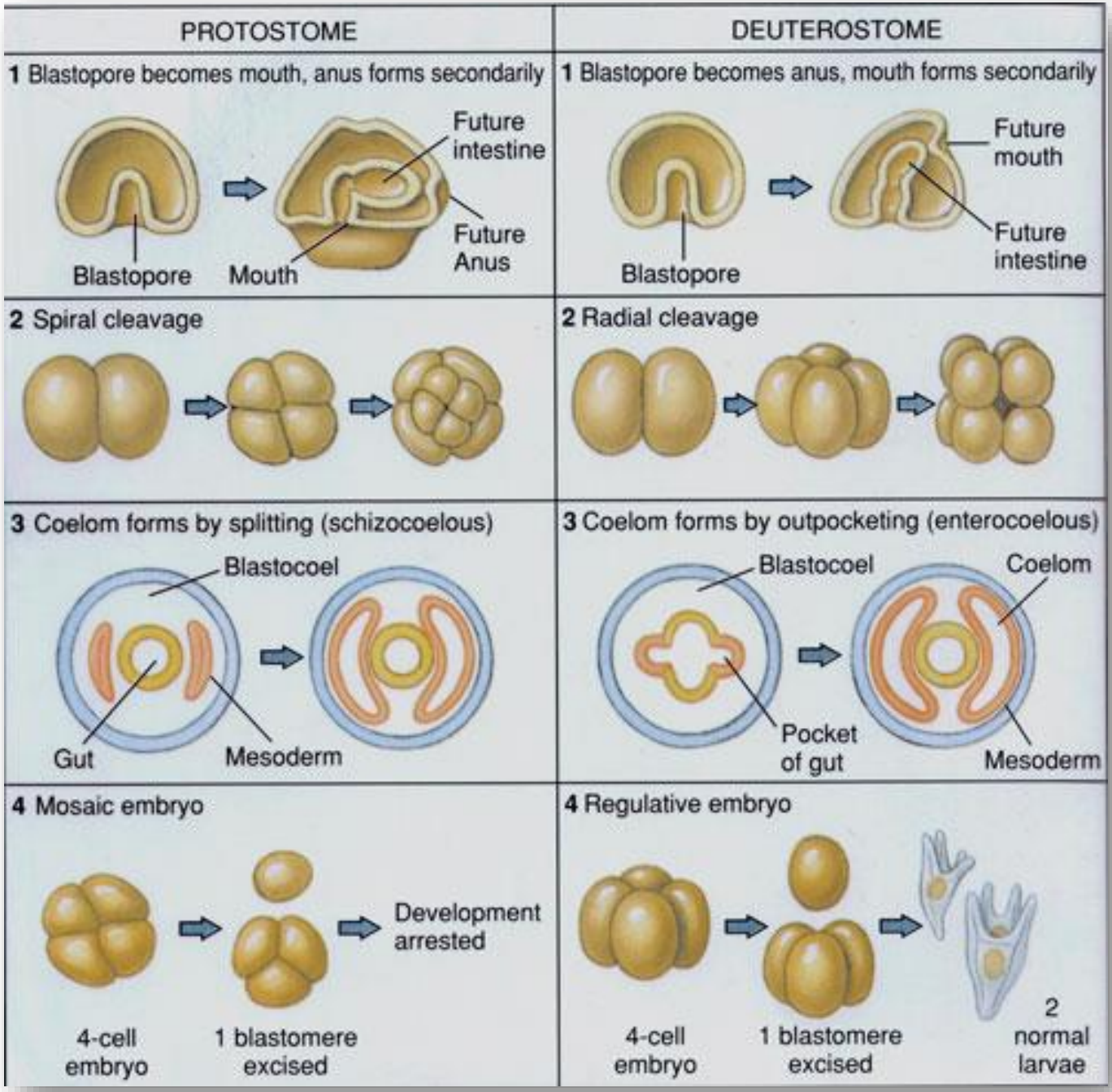
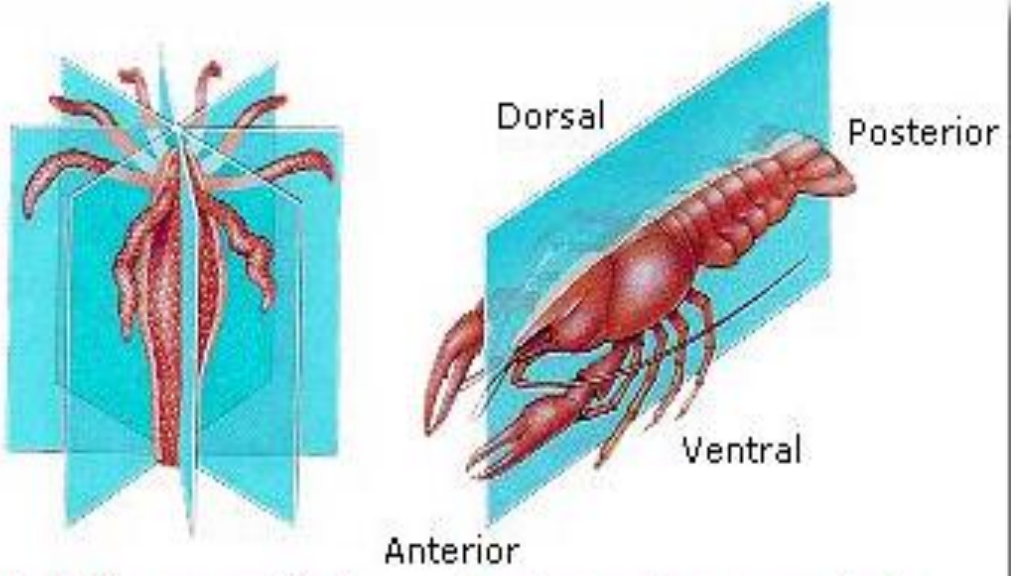
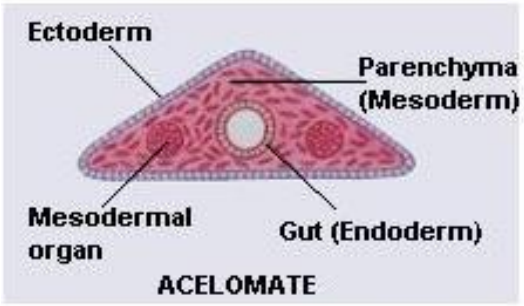
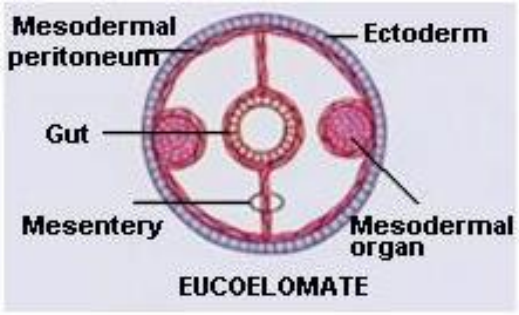

PROTOSTOME
DEUTEROSTOME
1 Blastopore becomes mouth, anus forms secondarily
Future intestine
Future Anus
Blastopore
Mouth
1 Blastopore becomes anus, mouth forms secondarily
Future mouth
Future intestine
Blastopore
2 Spiral cleavage
2 Radial cleavage
3 Coelom forms by splitting (schizocoelous)
Blastocoel
Gut
Mesoderm
3 Coelom forms by outpocketing (enterocoelous)
Blastocoel
Coelom
Pocket of gut
Mesoderm
4 Mosaic embryo
Development arrested
4-cell embryo
1 blastomere excised
4 Regulative embryo
4-cell embryo
1 blastomere excised
2 normal larvae

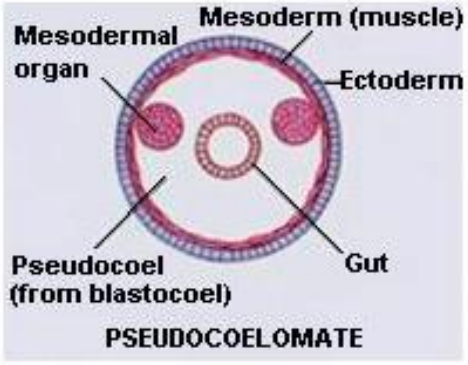


a. Radially symmetrical
Hydra

b. Bilaterally symmetrical
Crayfish

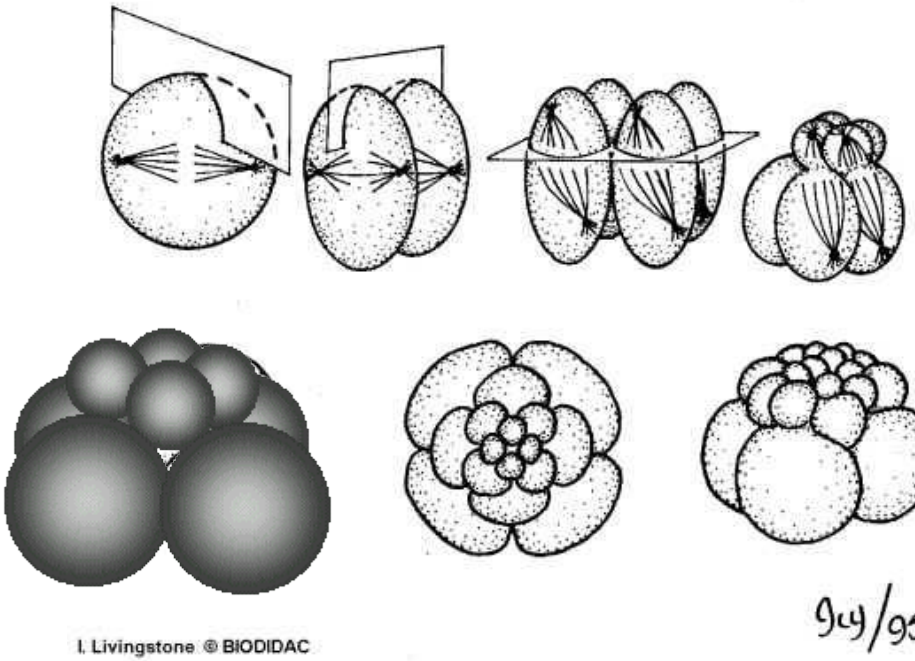


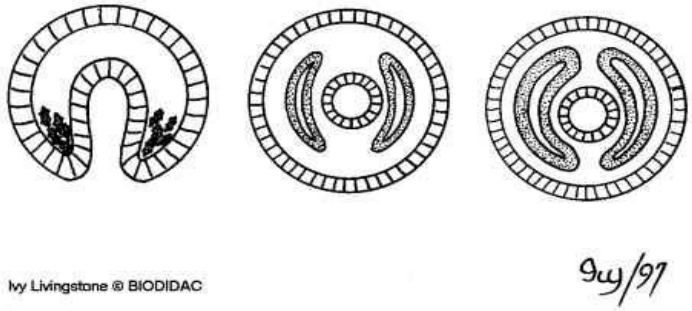




Radial Simetri

Protostome: animals whose development is characterized by: the mouth is derived from the [blastopore]
spiral determinate cleavage
schizocoelic coelom formation
the mesoderm is formed from a particular blastomere (called 4d)





Deuterostome: animals whose development is characterized by:

- the mouth is not derived from the blastopore
- **radial indeterminate** cleavage
- often characterized by **enterocoelous coelom** formation
- dipleurula-like larval stage