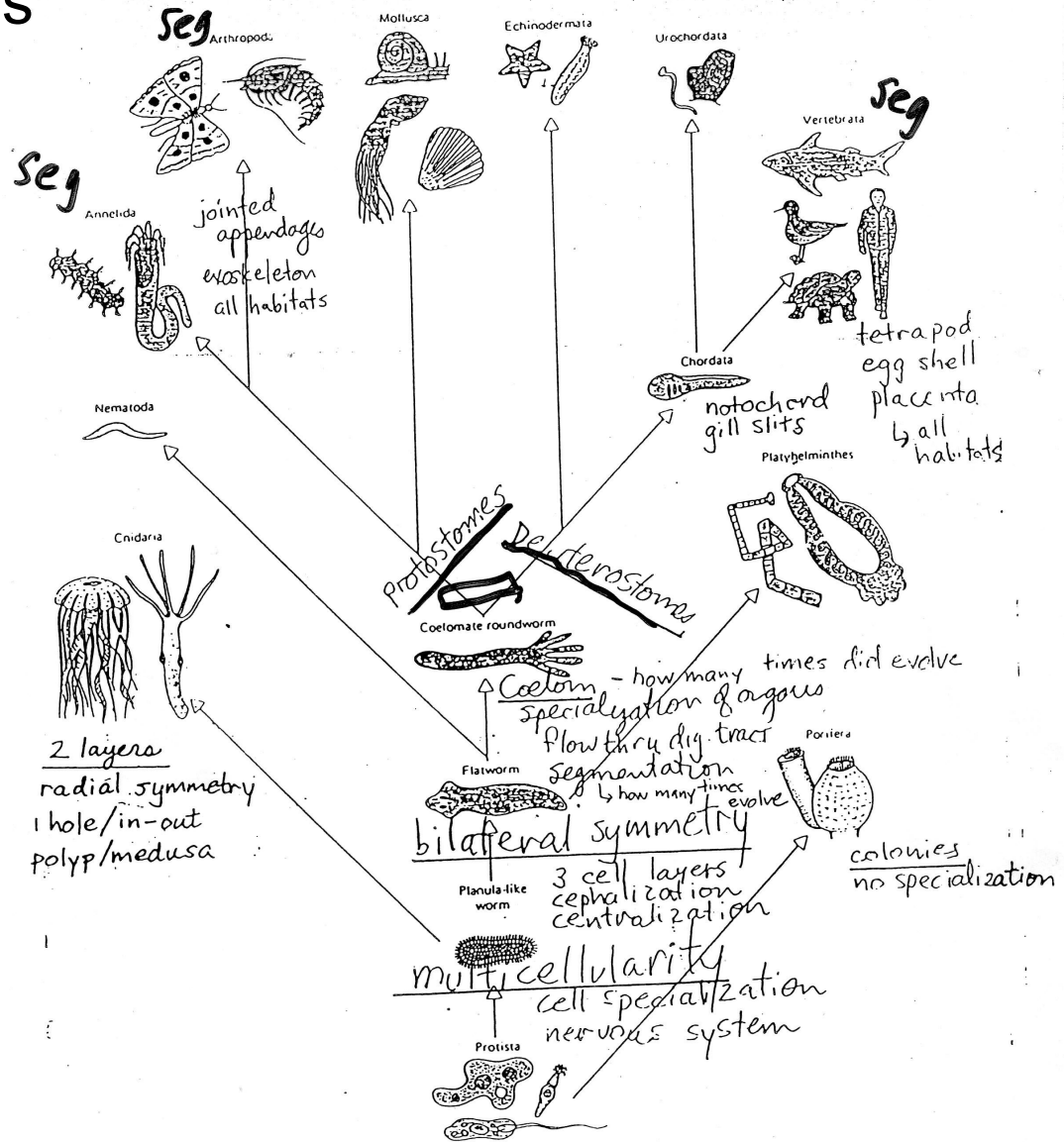


Major animal groups and evolutionary innovations

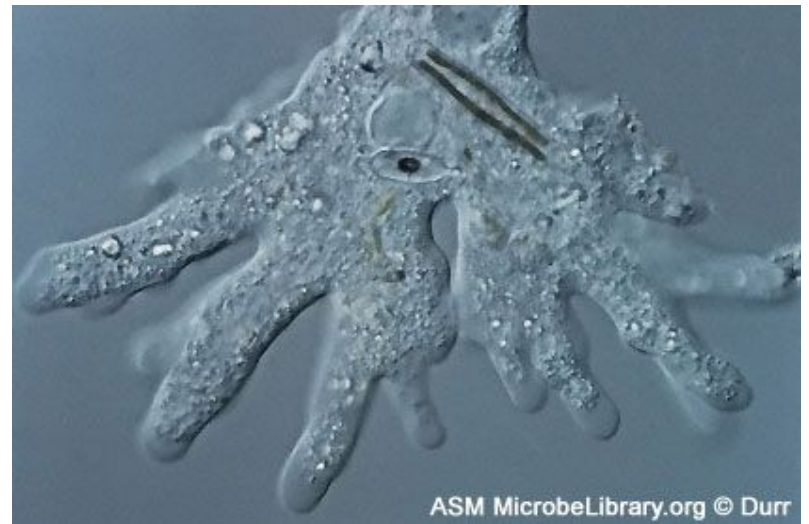
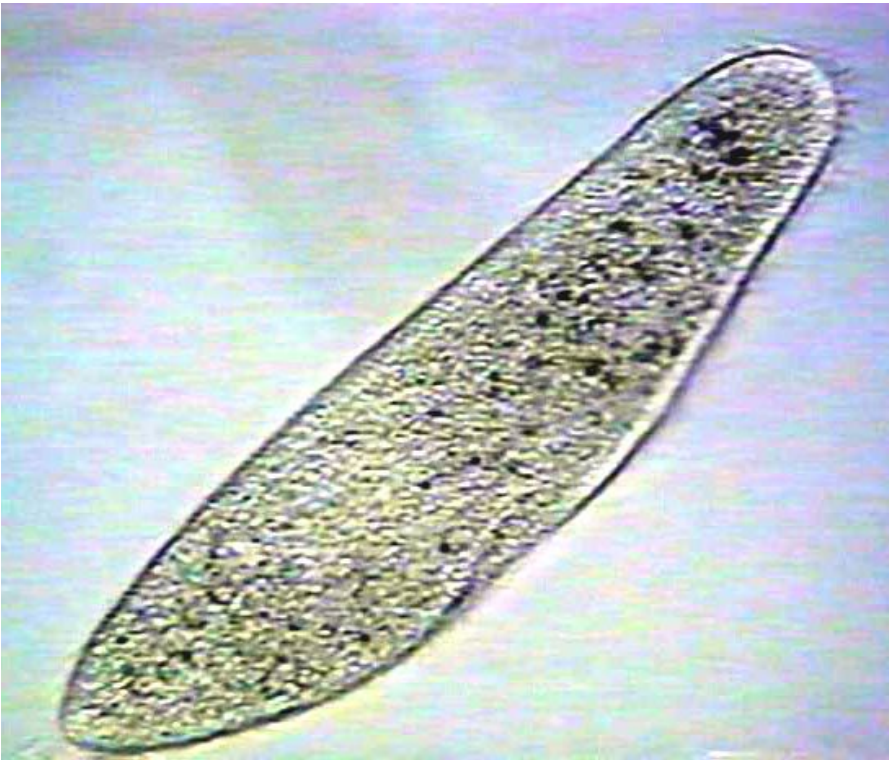


Evolution of different animals according to one widely held theory. based on the structure and development of modern animals.

homology analogy
convergence
divergence

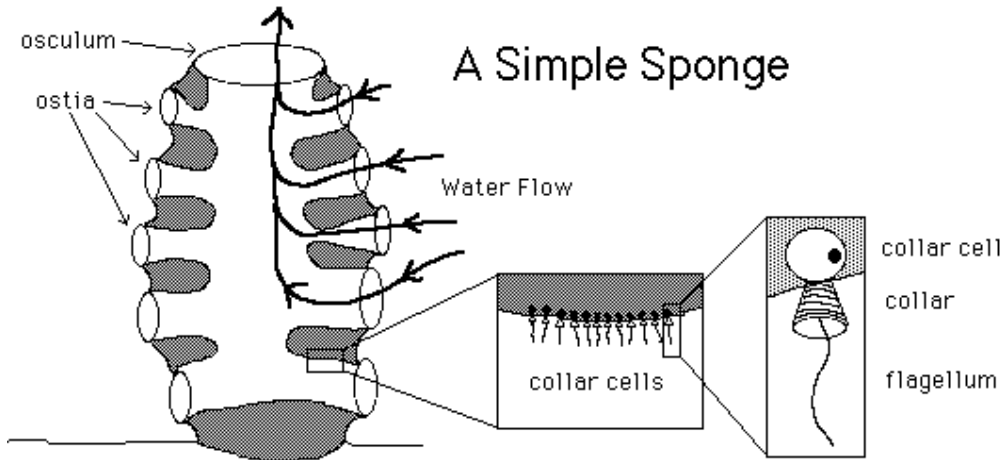
Protists

eukaryotes; unicellular



Porifera

sponges; colonial rather than truly multicellular



Metazoa: true animals

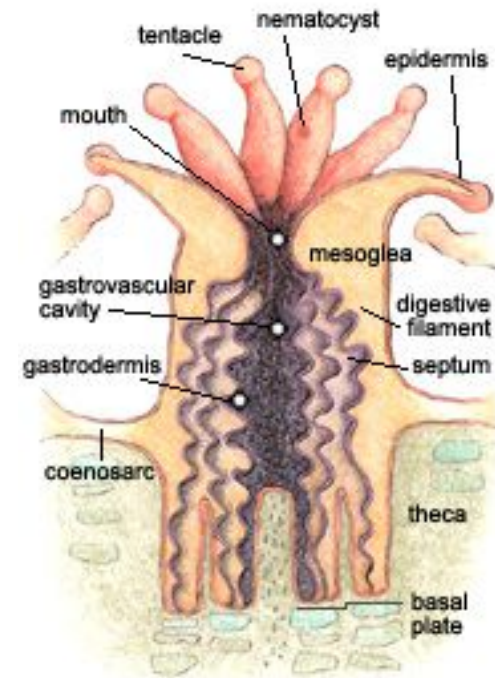
Phylum Cnidaria

corals, jellyfish, anemone

truly multicellular (2 embryonic cell layers)



Coral anatomy



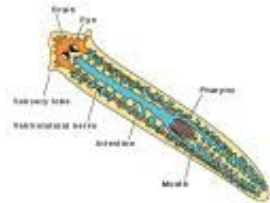
Zooxanthellae essential to reef ecosystem
(photosynthetic symbiotic algae in coral polyps)



Bleached corals due to expulsion of algae

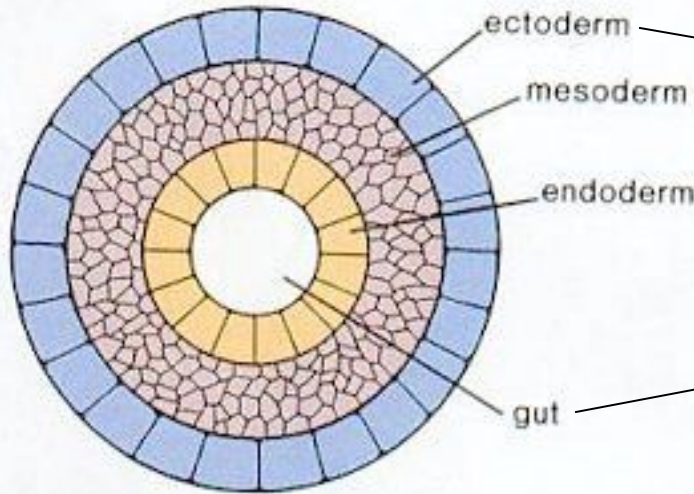
Triploblastic: 3 embryonic cell layers

- Platyhelminthes: bilateral symmetry
cephalization
centralization

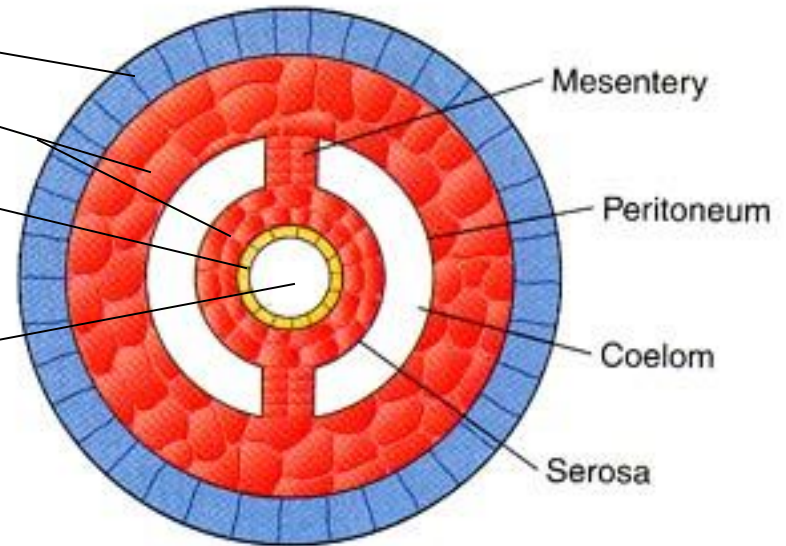


3 embryonic layers
No coelom

3 embryonic layers
coelom



Acoelomate
(no coelom)



- Flow through digestive tract
- Regional specialization
- Segmentation

PROTOSTOMES
(mollusks, annelids, arthropods)

DEUTEROSTOMES
(echinoderms, chordates)

(a)
CLEAVAGE

Eight-cell stage



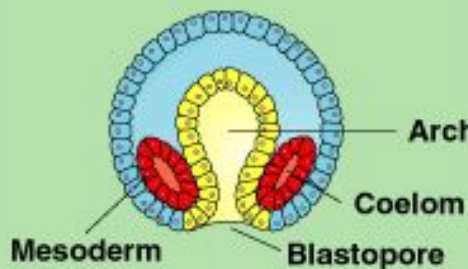
Spiral and determinate

Eight-cell stage

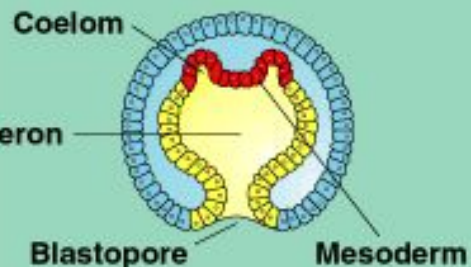


Radial and indeterminate

(b)
COELOM FORMATION

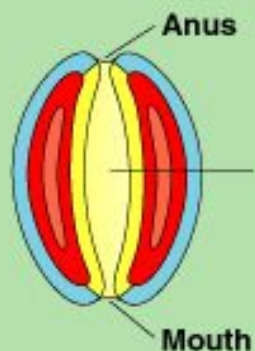


Schizocoelous: solid masses of mesoderm split to form coelom

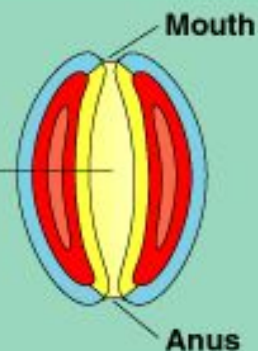


Enterocoelous: folds of archenteron form coelom

(c)
FATE OF BLASTOPORE



Mouth develops from blastopore



Anus develops from blastopore

Protostome: Phylum Annelida



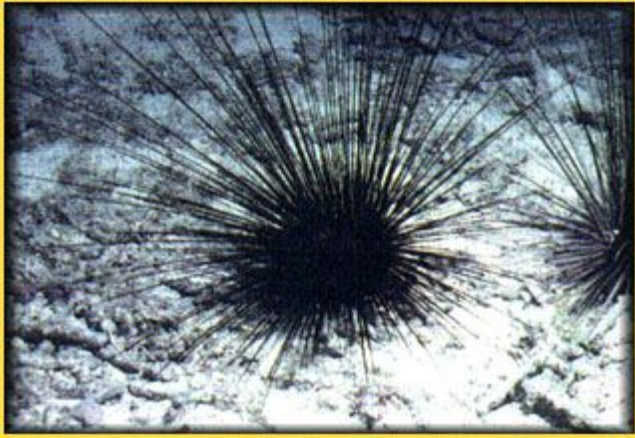
Protostome: Phylum Mollusca



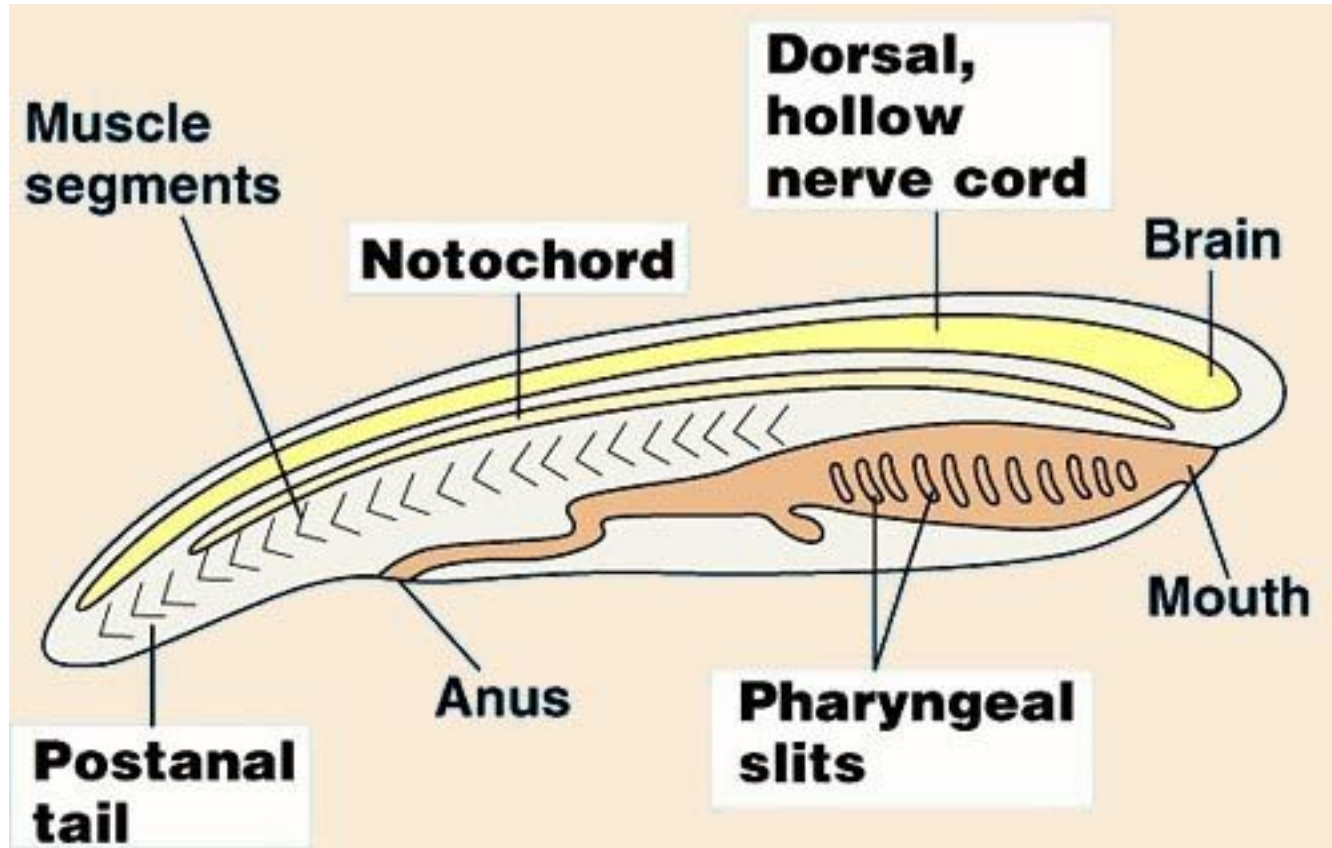
Protostome: Phylum Arthropoda



Deuterostome: Phylum Echinodermata



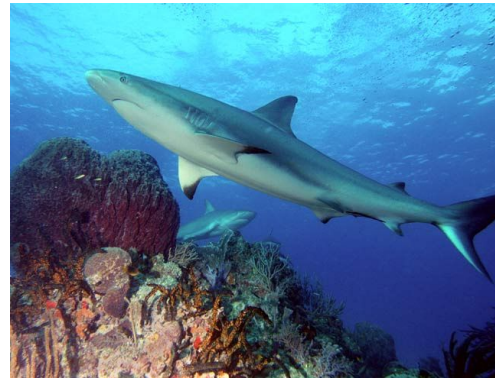
Deuterostome: Phylum Chordata



Tunicates (invertebrate chordates)



Subphylum Vertebrata: class chondrichthyes



Subphylum Vertebrata: class Osteichthyes



Subphylum Vertebrata: class amphibia



anurans

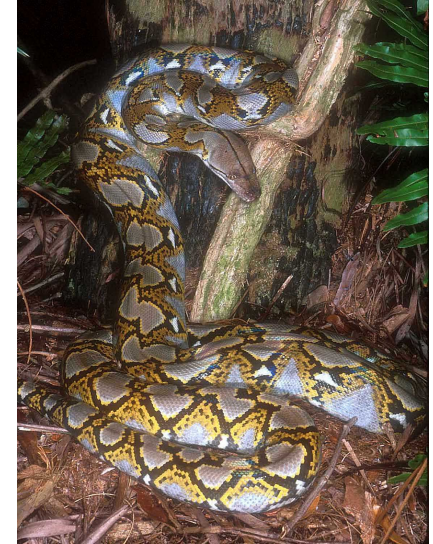
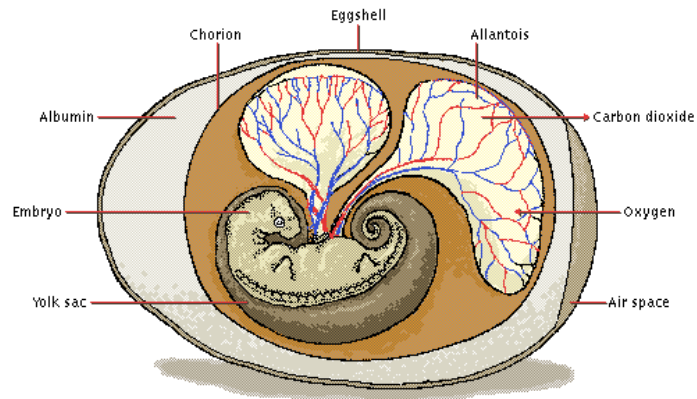


caecilians



urodeles

Subphylum Vertebrata: class reptilia amniotic egg



Subphylum Vertebrata: class aves

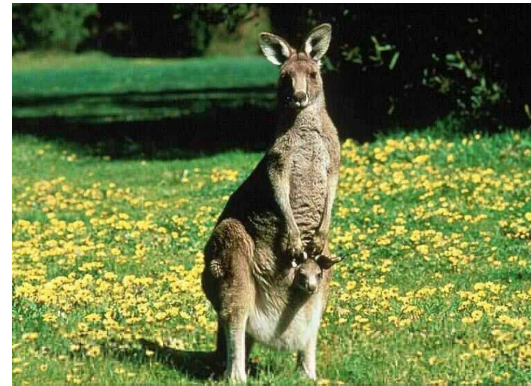


Subphylum Vertebrata: class mammalia

monotreme



marsupial



placental

