

ZOOLOGY

parazoa

What is an animal? A multicellular, eukaryotic, heterotrophic organism lacking cell walls

CLASSIFICATION OF THE METAZOAN KINGDOM



METAZOAN CHARACTERISTICS

- Advantages
 - Larger size
 - Increased mobility
 - Internal locomotion
 - Relative independence from environment

Symmetry

- Radial - Circular arrangement with numerous planes creating equal halves; no front/back or left/right sides; possess top/bottom or oral/aboral surfaces (1)
 - Sessile or pelagic forms
- Bilateral - Possess left/right sides (2)
 - "Cephalization" or concentration of sensory structures in the head
 - Unidirectional, active movement using head for orientation

1. RADIAL



2. BILATERAL



Embryology

- Zygote → 2 cell → 4 cell → 8 cell → 16 cell → Morula (solid ball of cells) → Blastula w/ blastocoel chamber → Gastrula w/ blastopore and archenteron (embryonic gut) (3)



- Three germ layers (from which all tissues develop) in place during gastrula phase: **Ectoderm, Mesoderm, Endoderm**
Diploblastic - Organisms produce only ectoderm and endoderm
Triploblastic - organisms produce all three layers

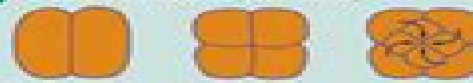
3. Protostome/deuterostome classification

a. Cleavage patterns

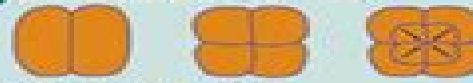
Spiral cleavage - New cells placed at junction between previous cells; protostome feature (4)

Radial cleavage - New cells placed directly beside or on top of previous cells; deuterostome feature (5)

4. SPIRAL CLEAVAGE (TOP VIEW)

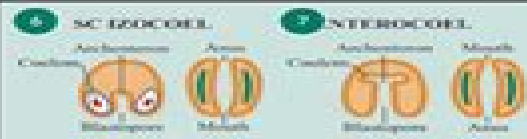


5. RADIAL CLEAVAGE (TOP VIEW)



- Developmental fate of cells
Determinate - Fate of cells determined early; separated early cells incapable of developing into entire organism; protostome feature
Indeterminate - Fate of cells determined relatively late; separated early cells can develop into entire organism; allows for "twinning" or genetically identical individuals; deuterostome feature

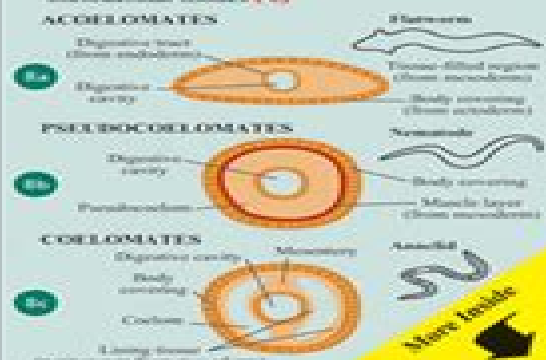
- Coelem formation - Body cavity lined by mesodermal tissues
Schizocoely - Derived from split in mesoderm; protostome feature (6)
Enterocoely - Derived from outgrowth of archenteron; deuterostome feature (7)



- Blastopore fate
Mouth: a second opening in embryo forms anus; protostome feature
Anus: a second opening in embryo forms mouth; deuterostome feature

c. Body plans

- Acoelomates** - No cavity between body wall and organs (1a)
- Pseudocoelomates** - Embryonic blastocoel persists as body cavity (1b)
- Coelomates** - Body cavity lined with mesodermal tissues (1c)



Zoology Study Guides

Arshad Iqbal



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