

Kingdom Animalia
Powerpoint Lecture on Chapter 32 – 34

I. Characteristics of Animals

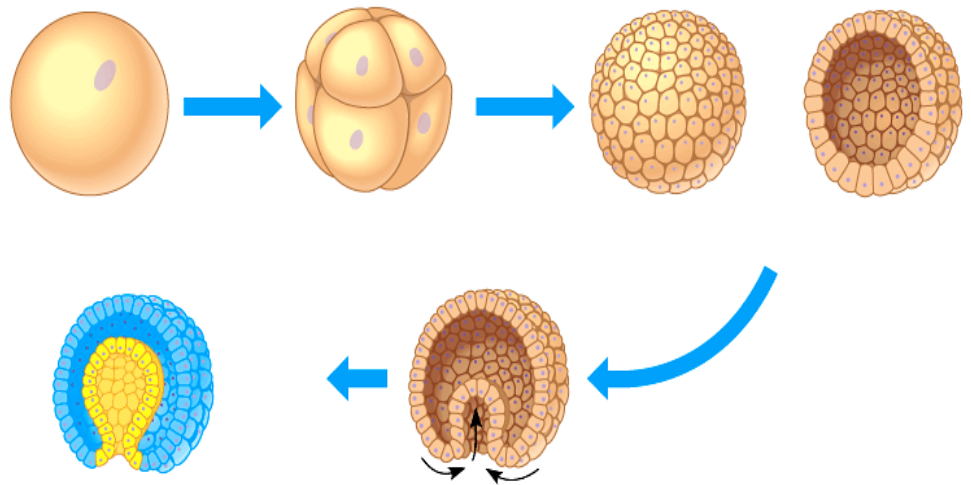
- 1) Multi-cellular, heterotrophic
- 2) Cell Structure
No cell walls
_____ = structural protein holds cell tissues together
Intercellular junctions: gap and tight junctions, desmosomes
- 3) Motility
- 4) Sexual Reproduction
 - 2N dominant stage
- 5) _____ genes control _____ development into an adult animal
- 6) Development of embryo leads to formation of _____
_____.

What do the germ layers develop into?

→ _____, outer covering; for some species, gives rise to the central _____ system (CNS)

→ developing _____ tube and other internal organs derived from it, like the _____ and _____

→ _____ and most other organs between the digestive tube and skin



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The diversity of animals are due to differences in the following:

1) Tissue Complexity

_____ = animals that lack "_____" tissues
 _____ = have layers of true tissue

2) Symmetry

_____ - round; mirror images formed when divided down the middle in any way

_____ - Forms right and left, top (_____) and bottom (_____), front (_____) and back (_____) sides

3) Coelom Development:

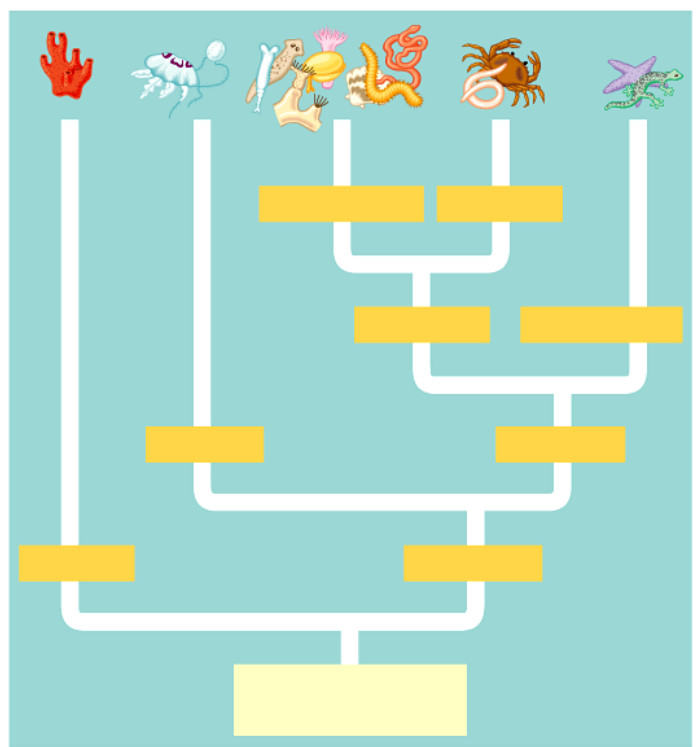
Coelom = hollow body cavity created from germ layers during development

- Fluid filled to allow _____ and _____
- Protects _____

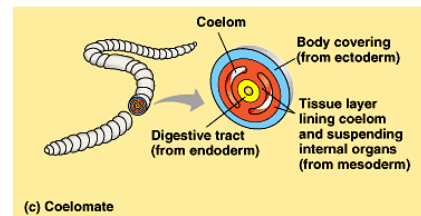
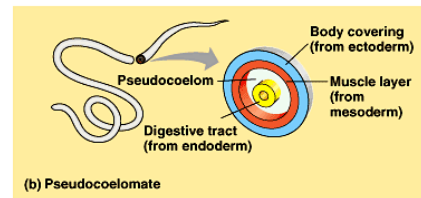
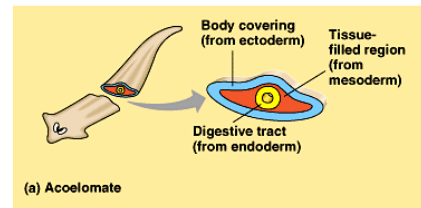
Coelomate = _____ body cavity (both _____ and _____ layers of coelom lined by _____ tissue)

Pseudocoelom = _____ body cavity (_____ side lined with mesodermal tissue)

Acoelomate = _____ body cavity (_____ between gut and ectoderm)



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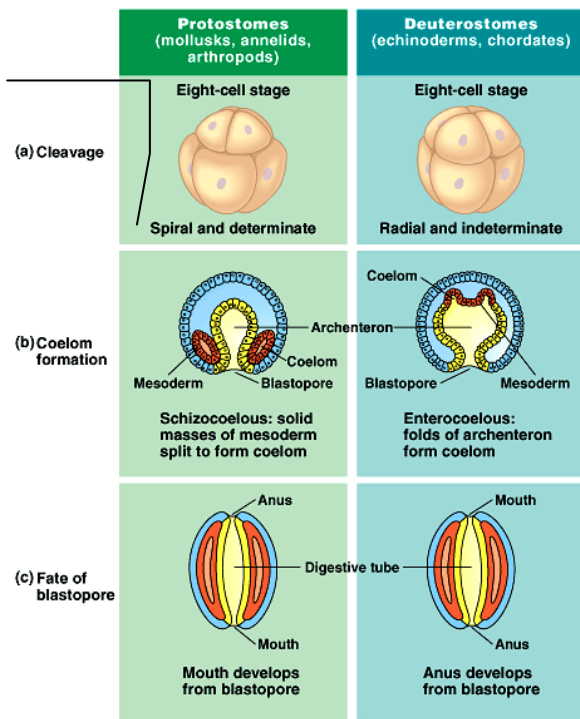
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4) Gastrovascular Cavity:

Only one opening from gut (like jellyfish)
 Two openings from gut (mouth/anus)

5) Differences in Coelom Development:

Protostome Cleavage:
 _____ and _____
 (Determinate = fate of embryonic cells are already _____)
 _____)



Deuterostome Cleavage:
 _____ and _____
 (Indeterminate = _____ cell can develop into a complete embryo if _____)

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6) Exoskeleton existence
 Ecdysozoa – secrete _____
 Lophotrochozoa – none

7) Cephalization: development of a _____ System, “ _____ ” and accessory sensory organs (nasal, visual, etc.)

8) Segmentation and _____ of tissue

Invertebrates

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Phylum	Common Name	Traits
Porifera	Sponges	-sessile (non mobile) adult stage -mobile gametes -filter feeders (choanocytes = specialized flagellated cells used for filter feeding) - osculum = large opening that let water out - spicule skeleton -assymetric

Cnidaria	Jellyfish, Sea Anemone, Corals	-stinging cells called nematocyst on tentacles -medusa and polyp forms -one opening for the mouth
Platyhelminthes	Flatworms, flukes, tapeworms, planarians	-acoelomate worms -many parasitic forms due to having no real digestive system -bilateral -segments called proglottids used for reproduction (asexual)
Nematoda	Roundworms	-pseudocoelomate worms w/complete digestive tract -soil dwellers, composters
Rotifera	Rotifers	-microscopic -ciliated bilateral filter feeders
Mollusca	Snails, octopus, clams	-soft muscular body with shell Class: Gastropod "stomach-foot" = ex. Snail Class: Cephalopod "head-foot" = Ex. Octopus, squid -have internal shell called the pen Class: Bivalve = two shells ex. Clams, oysters
Annelida	Segmented worms, Earthworms, leeches	-coelomate worms segmented body types -variety of lifestyles from parasitic, burrowing, composting
Arthropoda	Crayfish,	-jointed legs -chitin exoskeleton -well developed Nervous System Some born like mini-adults = nymphs Some born as larvae that must go through metamorphosis
Echinodermata	Starfish, sea urchins, sand dollars	-spiny skin -most radial, some bilateral -suction cupped "tubed" feet -digest food outside of their bodies -ability to regenerate lost body parts

Chordata = Vertebrates

A) Evolutionary Features

1) notochord =

2) Dorsal Hollow Nerve Cord =

3) Pharyngeal Gill Slits =

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-
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4) Muscular Tail (most chordates)

Classes	Traits
Urochordata (Tunicates) and Cephalochordata (Lancelets)	-invertebrate chordates -4 evolutionary trademarks found in larval form -no "true" backbone developed yet
Agnathans (Hagfish and Lampreys)	-jawless vertebrates, rudimentary backbone -possible predecessors of cartilaginous and bony fish
Condrichthyes (Cartilaginous Fish)	-ex. Sharks, rays -cartilaginous back bone and skeleton (flexible, but cannot make quick turns) -external fertilization -ectothermic (cold blooded)
Osteichthyes (Bony Fish)	-beginnings of internal fertilization, some external -true "bone" backbone and skeleton -rigid bones allow for quicker turn radius fast changes in direction -some "lay" eggs – gelatinous, no shell

Amphibia	<ul style="list-style-type: none"> -mvmt onto land: development of limbs at 90 degree angles from body -double life –aquatic adolescent stage, terrestrial adult stage -breathe with gills as well as through skin -skin must remain moist for gas exchange -gelatinous eggs, no shell
Reptilia	<ul style="list-style-type: none"> -hard, dry, waterproof, scaly skin -hard shelled amniotic eggs (waterproof) -full terrestrial adult life
Birds	<ul style="list-style-type: none"> -hollow bones, development of feathers, (evolution of scales) -beaks, claws -hard, shelled amniotic eggs -endothermic (warm-blooded)
Mammalia	<ul style="list-style-type: none"> -fur -nurse young with milk -warm blooded -internal development of embryo (eggs remain inside the body – dvlp placenta)