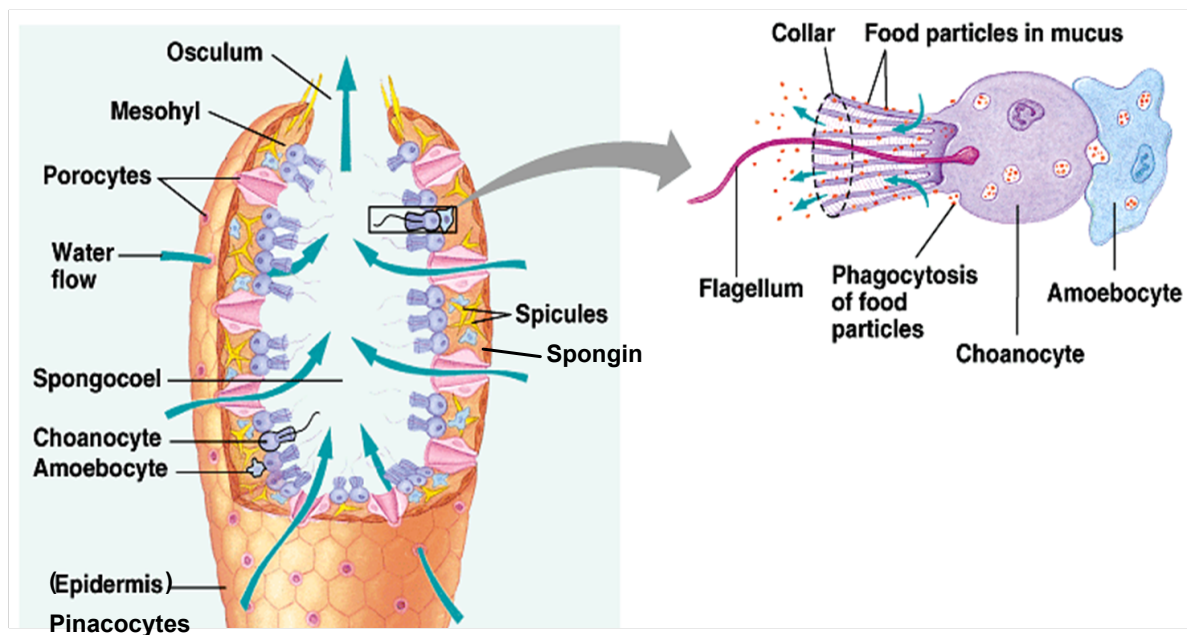


## Chapters 23-24 (Look at diagrams for more structural detail)

### I.Sponges - Phylum Porifera “*pore bearer*” Ex: *sponges*

- have *two* cell layers - they have no tissues, organs or organ systems;
- most live in *marine* habitats but some are found in freshwater
- are *asymmetrical* and most *sessile*
- **filter** feeders



## II. Cnidarians

Ex: *corals, jellyfish, sea anemones, hydra*

- have *two* tissue layers; *no body plan*
- *radially* symmetrical
- all but few live in *marine* habitats
- have **nematocysts** - stinging cells, located mostly in **tentacles**
- incomplete digestive tract (*one* opening)
- two body forms
  - \* *polyp* - sessile
  - \* *medusa* - free-swimming



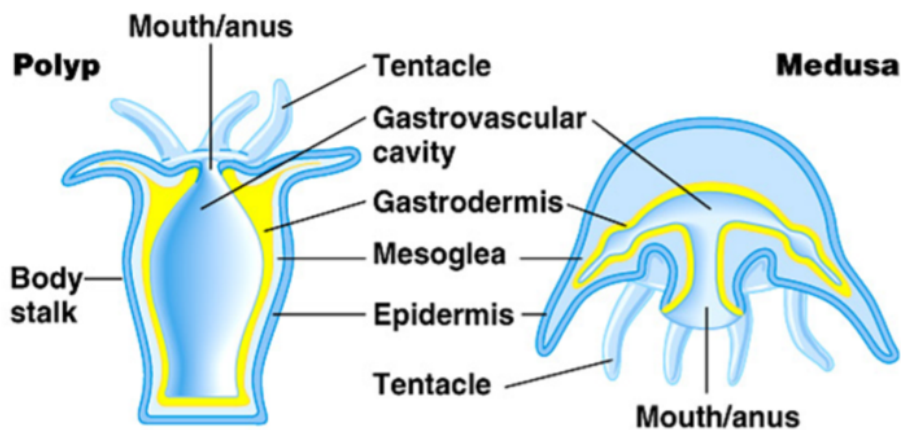
Hydra



(a) Sea anemone: a polyp



(b) Jelly: a medusa



### III. Platyhelminthes

Ex: *flatworms, flukes, tapeworms*

- least **complex** worm phyla
- **three** cell layers; **acoelomate**
- found in **marine, freshwater, and moist habitats on land**
- are **bilaterally** symmetrical
- **scolex** - knob shaped heads of a **tapeworm**
- **one** body opening through which **food** enters and **wastes** leave (incomplete digestive tract)



**Scolex**

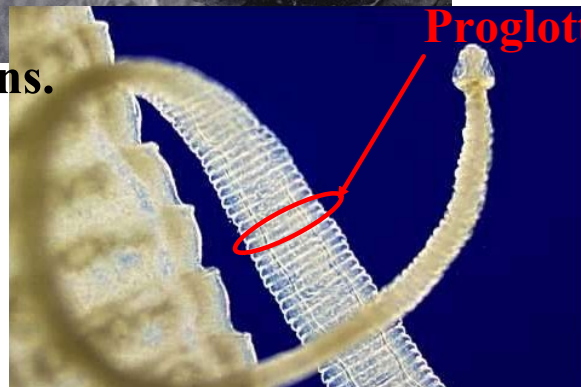
**Proglottid** or proglottis

- One segment of a tapeworm, contains **both male and female reproductive organs**.

Each mature segment can **produce a tapeworm**.



**Proglottid**



## IV. Mollusks

Ex: *snails, octopus, clams*

- most species live in the *ocean*; but some live in fresh and **brackish** habitats
- have *bilateral* symmetry; *three* cell layers; a *coelom*; a *complete* digestive tract with *two* openings; a muscular *foot* and *mantle* - a membrane that surrounds the internal *organs*; a *radula* - scraping feeding organ
- **reproduction** - most terrestrial - **hermaphrodite**; **aquatic** - **external**

### *PreAP only*

- Three most common mollusk classes:
  - \* *Gastropods* - means “stomach-foot” usually *one* shell
  - \* *Pelecypoda* or Bivalves - means “two-door”, have *two* shells
  - \* *Cephalopods* - means “head-foot”, shell *not* seen
- **Cephalopods** are considered the **most** complex structure and to be the most recently evolved.



Ex. Gastropods, Snail; Cephalopods, octopus;



Pelecypoda, clams

*Mollusk body is divided up between a muscular foot and a mantle*

## V. Annelida

Ex: *leeches, bristleworms, earthworms*

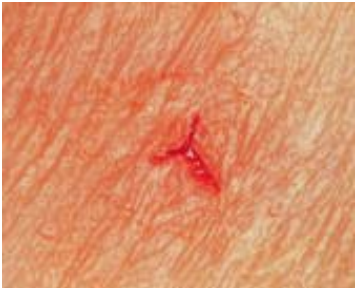
- *bilateral* symmetry
- have a *coelom* and *two* body openings
- have tiny bristles called *setae* on each segment, which help them *move*
- segmentation is an important adaptation for:
  - \* **hydrostatic** movement because each segment has its own **muscles** allowing shortening and lengthening of the body
  - \* specialization of **body** tissues

- have **simple** nervous systems in which organs in the **anterior** segments have become modified for sensing
- have **closed** circulatory system - blood flows through **vessels** to all parts of the body
- have a **complete** digestive tract that runs the length of the body.
- reproduces **asexually by fragmentation**; and **sexually with cross fertilization, hermaphrodites**



**Earthworm**





Bristle Worm



Tubeworm

## VI. Nematoda

Ex: *pinworms, hookworms, Ascaris, Trichinella*

- freshwater, marine, terrestrial, *parasitic*
- complete digestive tract - **two** body openings- a **mouth** and an **anus**, *pseudocoelomate*
- approximately *half* of the roundworm species are *parasites* and about 50 species infect **humans**
- moves in a "**whip like**" action due to **longitudinal muscle**
- has an **exoskeleton** called a **cuticle**, made of **chitin**
- **sheds** exoskeleton as grows
- pinworms are the most *common* roundworm parasites in **humans** in U.S.





## VII. Arthropods

Ex: *Arachnids, insects, crustaceans*

- typical arthropod is a *segmented, coelomate* invertebrate
  - *bilaterally* symmetrical
  - have an **exoskeleton**, made of *chitin*, and *jointed* appendages - any structure, such as a leg or an antenna that grows out of the *body*
  - the exoskeleton *protects* and supports internal tissues and provides places for attachment of *muscles*
  - most arthropods *molt* four to seven times in their lives before they become adult
- 
- have **sensory** organs; *antennae*, for temperature, touch, sound, and smell; *compound* or simple eyes
  - *live* in about every habitat in the world
  - *open circulatory* system
  - *excretory* structures - Malpighian tubules
  - *respiratory* structures - book lungs

- most arthropods have three body segments

- \* *head*
- \* *thorax*
- \* *abdomen*



- some have two body segments

- \* *cephlothorax*
- \* *abdomen*



### *PreAP only*

- Four groups of Arthropods
  - \* *Chelicerates* - horseshoe crabs, spiders, scorpions, ticks
  - \* *Crustaceans* - crabs, lobsters, shrimp
  - \* *Insects* - flies, grasshoppers, butterflies
  - \* *Myriapods* -
    1. centipedes (sometimes classified as Chilopoda)
    2. millipedes (sometimes classified as Diplopoda)



# Major classes Arthropods

(as well as some I just like)

## Chelicerates



## Crustacea



# Insecta



# Diplopoda



# Chilopoda

## VIII. Echinoderms

Ex: *Starfish, sea urchin, brittle star, sand dollar*

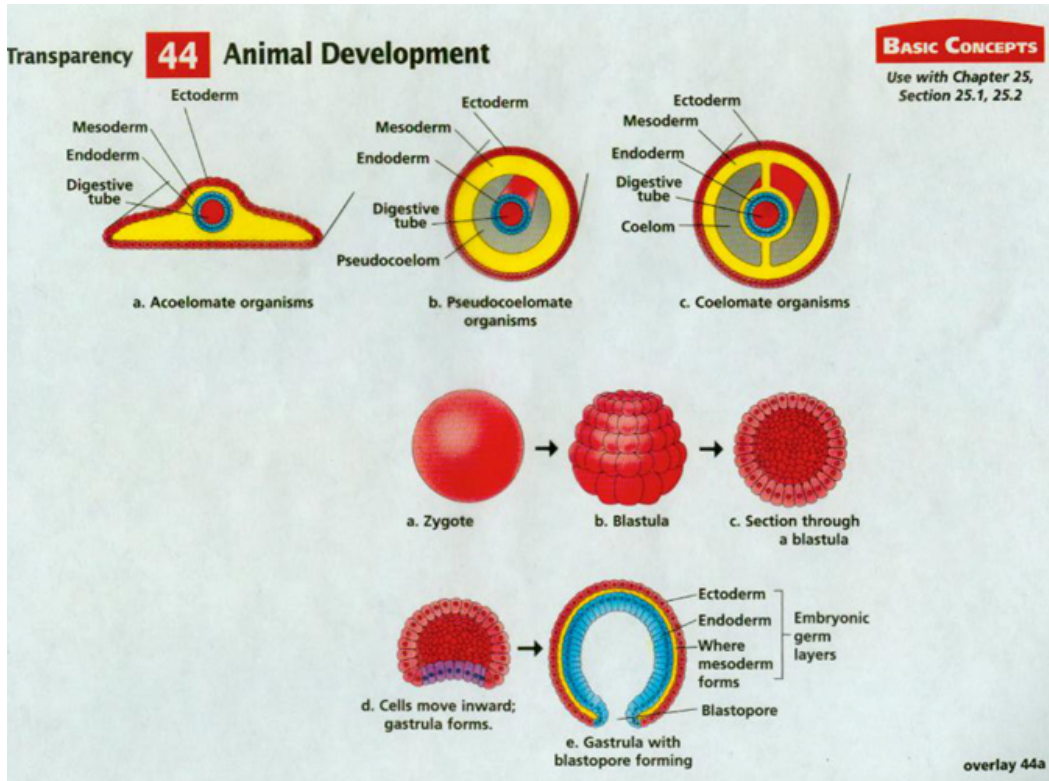
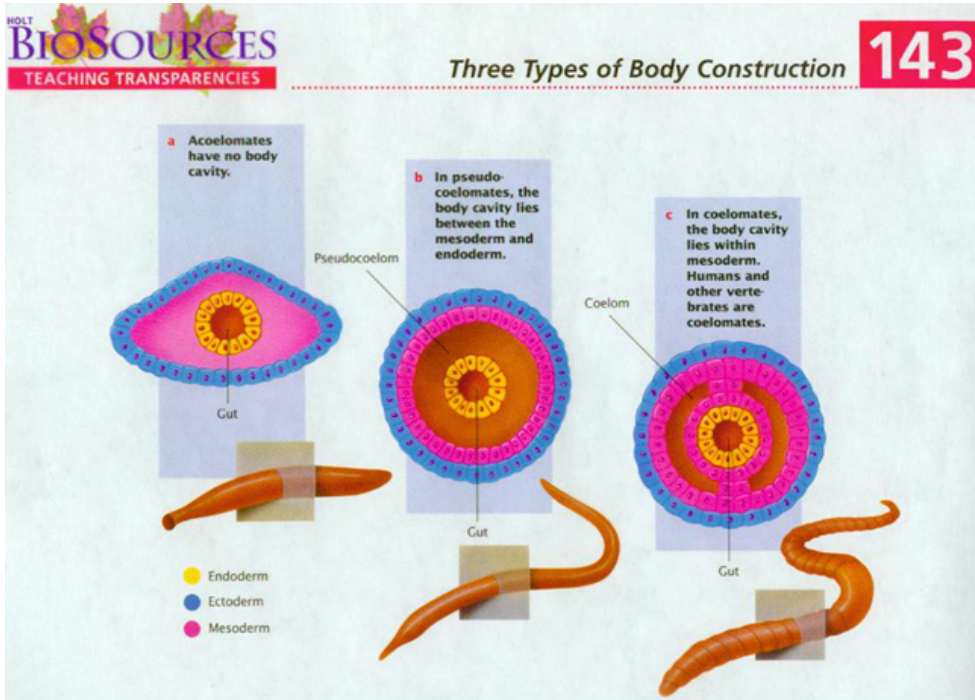
- *radial* symmetry, as adult; *bilateral* symmetry as larvae
- *spiny* skin
- **water vascular system** - a **hydraulic** system that operates under **water** pressure; enables them to **move**, exchange **gases**, capture **food** and excrete **wastes**
- *simple* nervous system

- have a special *organ* called a **tube foot** - hollow thin-walled *tubes* that end in a *suction* cup



- *complete* digestive system
- reproduce **sexually - externally**
- **filter** feeders & carnivorous **predators**
- *regenerates* body parts (must have ring canal in place to do so)





**Transparency 61 Typical Animal Characteristics**

**SECTION FOCUS**  
Use with Chapter 25, Section 25.1

Barnacle  
Gerbil  
Frog  
Jellyfish  
Porcupine  
Sea star  
Spider

- 1 Which of these organisms do you think are animals?
- 2 On what characteristics did you base your answer?

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Science TAKS: Obj. 2: 8C (10, 11); Obj. 3: 7B (10, 11)  
BIOLOGY: The Dynamics of Life

SECTION FOCUS TRANSPARENCIES

**Transparency 62 Body Plans and Adaptations**

**SECTION FOCUS**  
Use with Chapter 25, Section 25.2

Group A  
Group B  
Group C

- 1 How are shapes of the organisms in each group similar?
- 2 How is the shape of each organism suited to the environment in which it lives?

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Science TAKS: Obj. 2: 8C (10, 11); Obj. 3: 7B (10, 11)  
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SECTION FOCUS TRANSPARENCIES