

# Introduction to Molluscs

Fish 310



# The Molluscan Phylum

All molluscs possess *some or all* of the following characteristics:

- Bilateral symmetry and lack segmentation
- Muscular foot which is modified into tentacles and siphon in cephalopods
- Visceral mass containing the digestive, excretory and reproductive organs
- Mantle, usually two folds that enclose the gills or lungs, and secretes the shell
- Radula, a zipper-like organ (built-in saw equipped with rows of microscopic teeth)
- Gills for respiration (the ctenidium)—counter current exchange
- Open circulatory system –no capillaries but has vessels (except in cephalopods = considered closed)
- Veliger larvae
- Shell made of calcium carbonate

# The Molluscan Phylum

## Major Classes of Mollusca:

- Aplacophora (shell-less worm-like deep sea critters)
- Monoplacophora (limpet like animals, rare)
- Polyplacophora (chitons)
- Scaphopoda (tusk shells)
- Bivalvia (clams, oysters, mussels)
- Gastropoda (snails, nudibranchs)
- Cephalopoda (nautilus, squid, and octopus)

# Class Polyplacophora

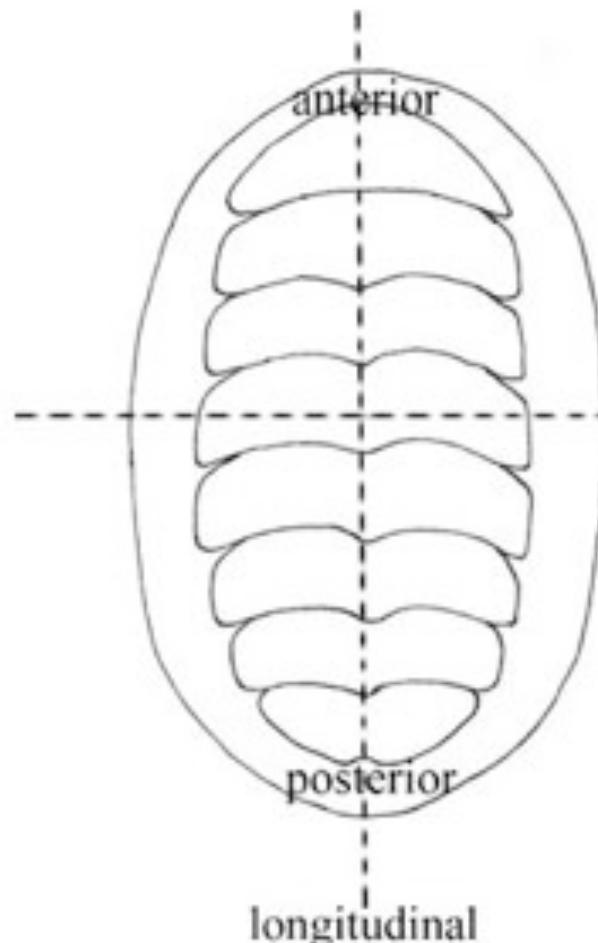


Defining characteristic:

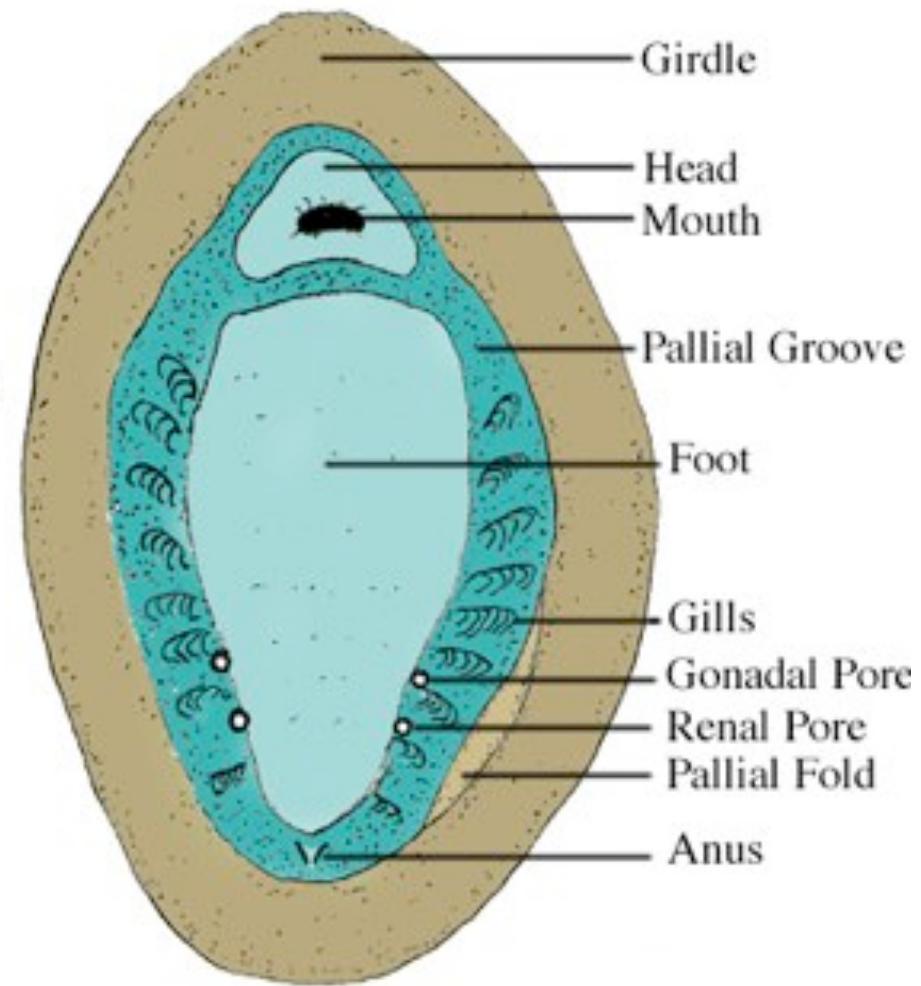
- Shell forms series of 7-8 overlapping plates



# Chiton Anatomy

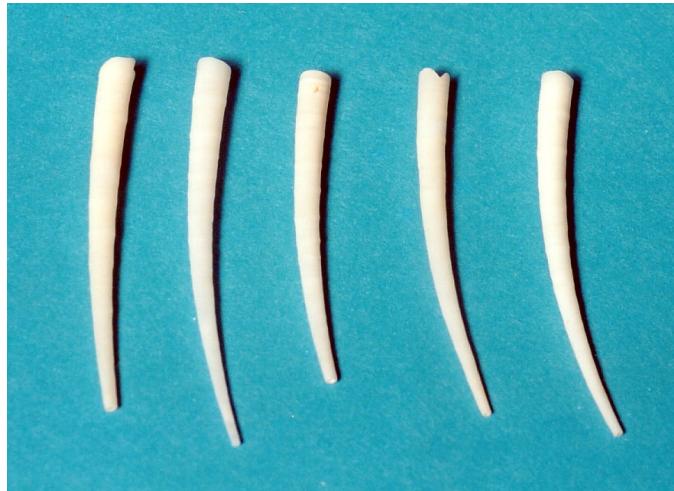


DORSAL

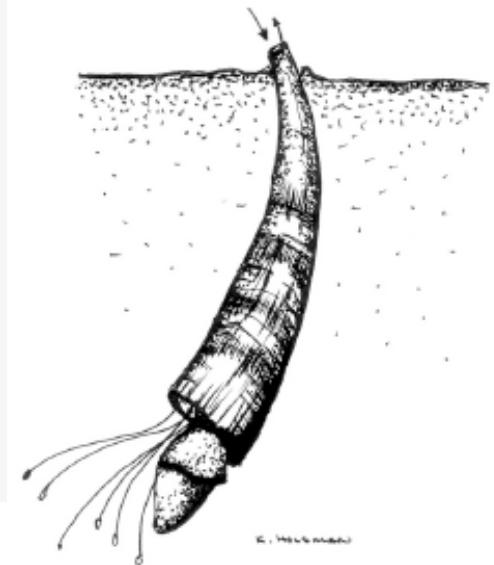
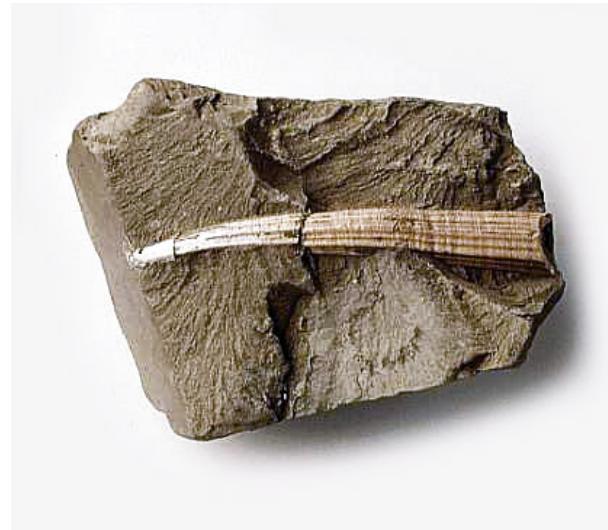


VENTRAL

# Class Scaphopoda



[http://www.chichesterinc.com/images/  
Dentalium%20Octagalutum%20Lg.jpg](http://www.chichesterinc.com/images/Dentalium%20Octagalutum%20Lg.jpg)



## Defining Characteristics:

- Tusk-shaped, conical shell that is open at both ends (bivalved but fused)
- Captacula: anterior thread-like, adhesive, feeding tentacles



<http://cache.eb.com/eb/image?id=84790&rendTypeId=4>



<http://www.dkimages.com/discover/previews/854/18135.JPG>

# Class Bivalvia

## Defining Characteristics:

- Two-valved, hinged shell
- Body flattened laterally
- Foot: also used for digging when present



<http://www.pc.gc.ca/pn-np/bc/pacificrim/natcul/natcul2c.aspx>

# Class Gastropoda



<http://upload.wikimedia.org/wikipedia/commons/thumb/9/93/Gastropod.jpeg/441px-Gastropod.jpeg>



<http://eebweb.arizona.edu/collections/>



<http://www.coastal.ca.gov/publiced/photos/2006/1-Bradford-nudibranch.jpg>

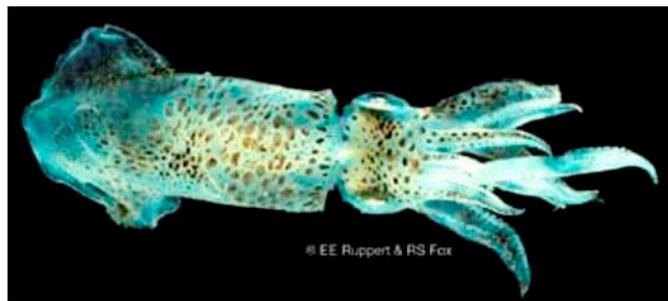
## Defining Characteristics:

- Torsion: counter clockwise twisting of the visceral mass and nervous system by 90-180° relative to the head and foot during larval development
- Operculum: proteinaceous shield on foot

# Class Cephalopoda

## Defining Characteristics:

- Shell divided by septa, chambers connected by siphuncle (shell reduced or lost in many cephalopod species)
- Closed circulatory system
- Foot modified into flexible arms and funnel (siphon)
  - Ganglia fused to form large brain in cartilagenous cranium



# Dichotomous Keys

- ❖ 2 choices per step
- ❖ An ideal key should:
  - Use constant characteristics (not things that change over time or season)
  - Use actual measurements (not “large” or “small”)
  - Use positive choices (“is” rather than “is not”)
  - Start both choices with the same word (if possible)
  - Start different pairs of choices with different words (if possible)
  - Pair a descriptor with the name of the part the descriptor applies to (IE legs are blue)

From: <http://nerds.unl.edu/Pages/preser/sec/skills/dkeys.html>

# Example dichotomous key: mammals of UW

- 1a. Tail present go to 2
- 1b. No tail = human
  
- 2a. Tail is furry go to 3
- 2b. Tail is naked go to 4
  
- 3a. Tail is striped = raccoon
- 3b. Tail is not striped = squirrel
  
- 4a. Tail is prehensile = opossum
- 4b. Tail is not prehensile = rat