

**Molluscs**


Single Phylum (**Mollusca**)

Over 90,000 spp in 8 Classes

Tube-within-a-tube body plan

True coelom (**Mesodermal** origin)

Several advanced systems



BIO202 - 2012 Scharf

---

---

---

---

---

---

---

---

**Mollusc Defining traits**

Complete **Respiratory** system with gills or lungs

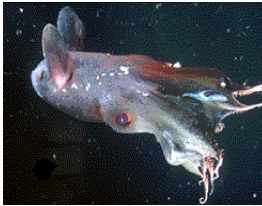
**Circulatory** system with heart

**Mantle** that secretes shell

Muscular **foot** for locomotion

Rasping organ in mouth (**Radula**)

Ciliary tracts



BIO202 - 2012 Scharf

---

---

---

---

---

---




---

---

**Mollusc Taxa**

**Class Gastropoda**

- Most diverse (70,000spp)
- If present, shell is single piece
- **Operculum** to cover shell opening
- Undergo **torsion** in larval stage
- Undergo **coiling** of shell and visceral mass



Copyright © 2012 Sinauer Associates, Inc. All rights reserved. For more information on this book, please go to the publisher's website.

---

---

---

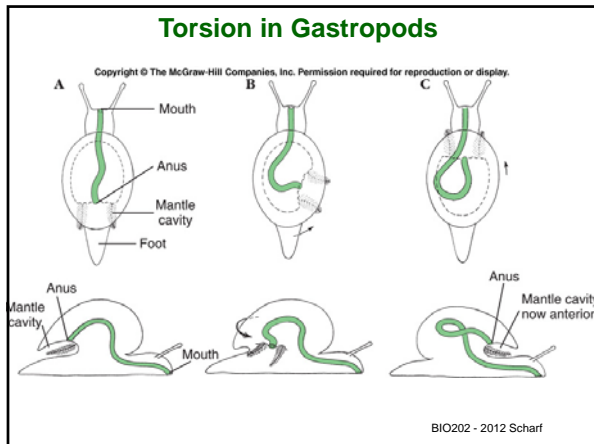
---

---

---

---

---




---

---

---

---

---

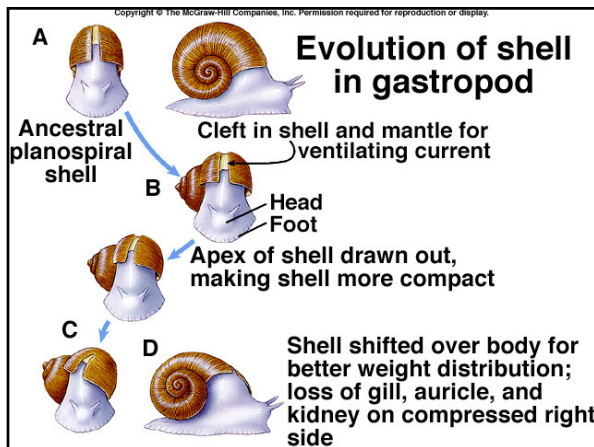
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

### Mollusc Taxa

**Class Gastropoda**

- Most are **herbivores**, but many are **carnivorous**
- Some use cilia or mucous for food capture
- Usually **one** efficient gill or lung
- Mostly internal fertilization

---

---

---

---

---

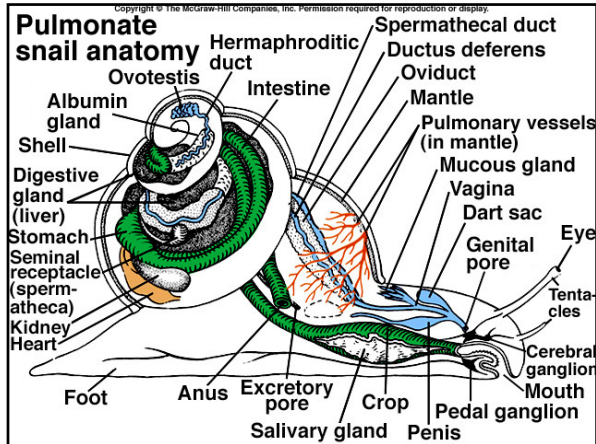
---

---

---

---

---




---

---

---

---

---

---


---

---

### Mollusc Taxa

Class Bivalvia

- Mussels, clams, scallops, oysters
- Most are filter feeders
- No head (reduced cephalization)
- Most are marine
- Two shells (valves)



BIO202 - 2012 Scharf

---

---

---

---

---

---


---

---

### Mollusc Taxa

Bivalve Form and Function

- Dorsal ligament for opening and adductor muscles for closing
- Umbo important for aging



BIO202 - 2012 Scharf

---

---

---

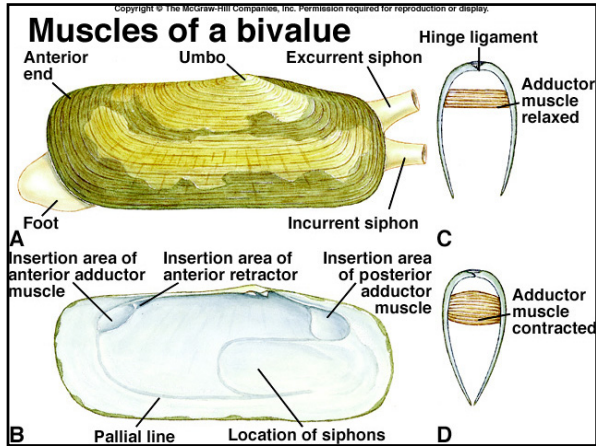
---

---

---

---

---




---

---

---

---

---

---

---

---

### Mollusc Taxa

#### Bivalve Form and Function

- Dorsal ligament for opening and adductor muscles for closing
- **Umbo** important for aging
- **Mantle** posterior modified into openings for water (**siphons**)
- Cilia for water flow over 2 gills
- **Foot** moved anteriorly for locomotion
- Swimming in scallops

The first photograph shows a close-up of a bivalve's umbo, a prominent, rounded shell edge. The second photograph shows a scallop swimming, with its mantle edge extended and siphons visible.

---

---

---

---

---

---

---

---

### Mollusc Taxa

#### Bivalve Form and Function

- **Gills** highly modified for filter feeding
- Mucous ensnares food which is passed along **grooves** to mouth
- Ciliary tracts in stomach for sorting

The first photograph shows the internal gills of a bivalve, which are highly branched and colorful. The second photograph shows the stomach of a bivalve, highlighting the ciliary tracts used for food sorting.

BIO202 - 2012 Scharf

---

---

---

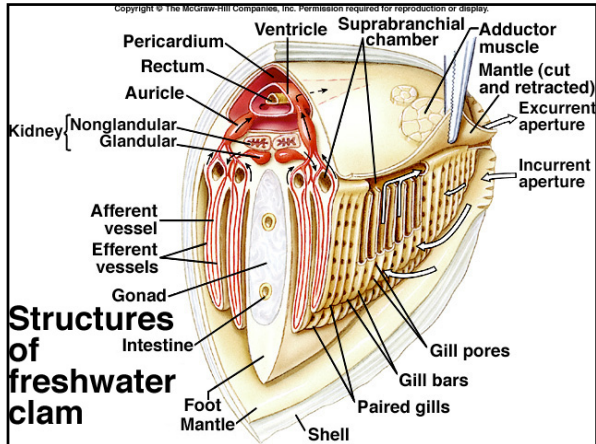
---

---

---

---

---




---

---

---

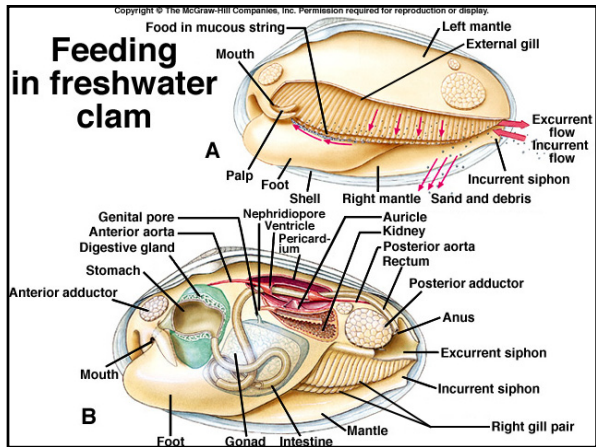
---

---

---

---

---




---

---

---

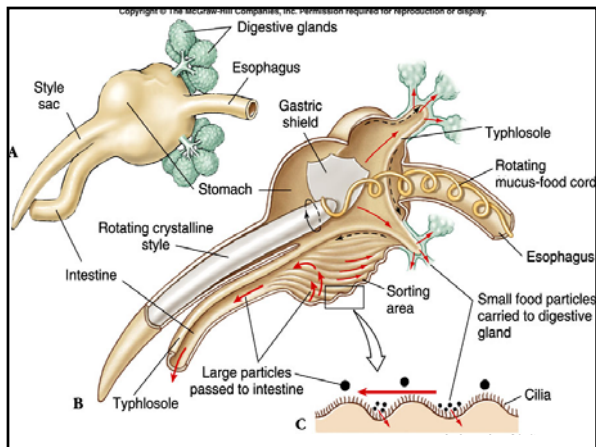
---

---

---

---

---




---

---

---

---

---

---

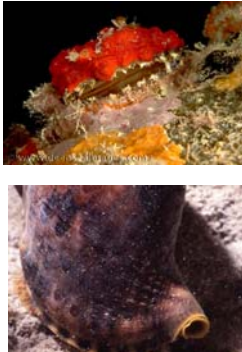
---

---

**Mollusc Taxa**

**Bivalve Form and Function**

- Gills highly modified for filter feeding
- Mucous ensnares food which is passed along grooves to mouth
- Ciliary tracts in stomach for sorting
- Circulatory, Excretory and Nervous systems present
- Dioecious; mostly external fertilization with several larval stages



BIO202 - 2012 Scharf

---

---

---

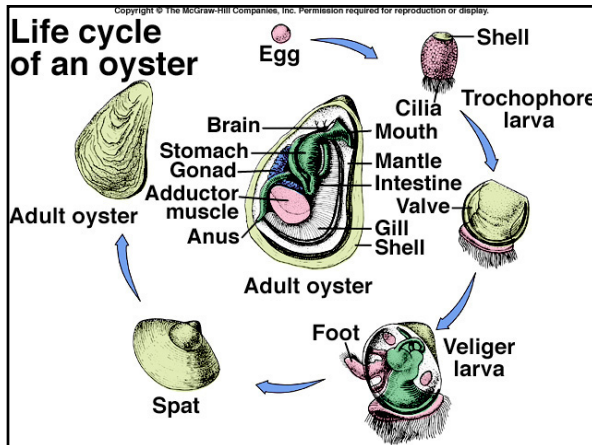
---

---

---

---

---




---

---

---

---

---

---

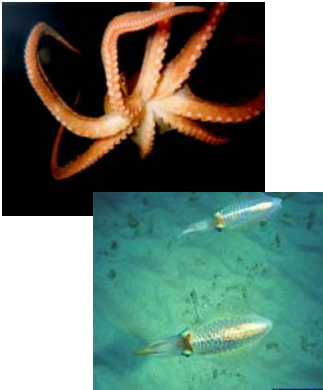
---

---

**Mollusc Taxa**

**Class Cephalopoda**

- All marine (high salinity) and carnivorous
- Foot highly modified and moved toward head
- Giant squid is largest invertebrate known
- Shell reduced in many, absent in Octopus
- Locomotion by jet propulsion through ventral funnel (siphon)




---

---

---

---

---

---

---

---

### Mollusc Taxa

#### Cephalopod Form and Function

- No cilia on gills, use muscular contraction of mantle for water flow
- Closed circulatory system with accessory hearts near gills
- Brain largest of all invertebrates; complex eyes
- Visual communication
- Most have ink gland for defense
- Separate sexes, copulation, and no larval stage



BIO202 - 2012 Scharf

---

---

---

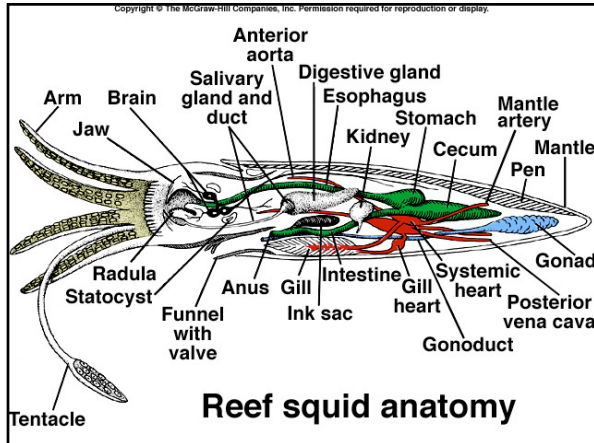
---

---

---

---

---



---

---

---

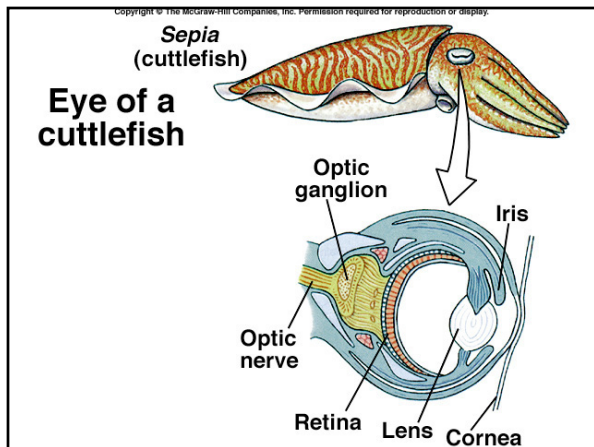
---

---

---

---

---



---

---

---

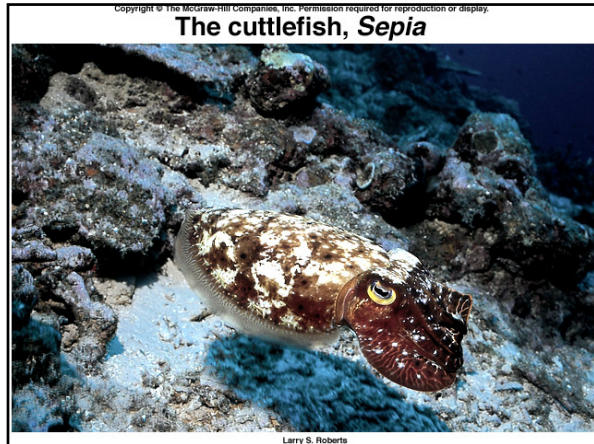
---

---

---

---

---



---

---

---

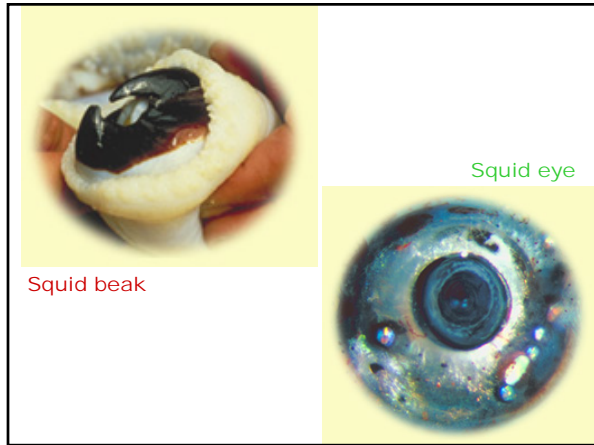
---

---

---

---

---



---

---

---

---

---

---

---

---