Comparative Anatomy Dissections

7 Systems

1. Support System

Includes

Muscular System

Skeletal System

Circulatory System includes:

2. Respiratory System

3. Cardiovascular System

4. Reproductive System

5. Digestive System

6. Excretory System

7. Nervous System

**Worm Dissection:**

Phylum: Annelid – segmented worm

Class: Oligochaeta – many bristles

Bilateral Symmetry

Coelomate

1. Support System

Two types of muscles:

* 1. Longitudinal – help the worm move through their environment
  2. Circulatory – help the worm twist and turn

The worm also has setae, little bristles, that help it anchor while moving

The worm is also filled with membranes called septa that separate the segments

Each segment is lined on both sides with a membrane with the digestive system through it. (Coelomate)

Each segment is fluid-filled that puts pressure on the external membrane that helps the worm keep it shape.

1. Respiratory System

Worms breathe through their skin

They have to remain in a moist environment to breathe.

1. Cardiovascular System

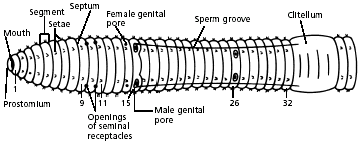
The worm does not have a heart but does have 5 aortic arches that surround the esophagus. Dorsally and ventrally there is a blood vessel that runs the length of the worm’s body.

The aortic arches and blood vessels appear to be black.

1. Reproductive System

The worm is a hermaphrodite – it contains both male and female reproductive organs.

Externally, there are obvious structures on the ventral side:

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Sperm grooves – run from the seminal receptacles to the clitellum

Clitellum – a thick area on the worm about one third the distance from the mouth

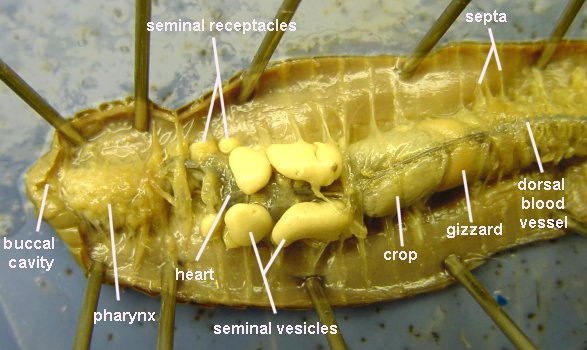
Male genital pores – opening to release the sperm

Female genital pores – opening to release eggs

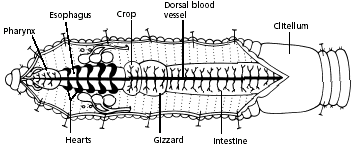
Seminal receptacles – allows the worm to store sperm for use later.

Internally, the most obvious structures are the seminal vesicles and the seminal receptacles.

Surrounding the seminal vesicles are the “hearts,” called the aortic arches.

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5. Digestive System

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The mouth – takes in the food

The pharynx – holds the food before it is moved into the digestive system

The esophagus – has muscles that move the food by peristalsis to the crop

The crop – the holding sac that slowly moves the food into the gizzard

The gizzard – a hard structure that grinds the food into smaller particles to the nutrients can be absorbed

The intestine – a long tube that absorbs the nutrients out of the food

The anus – the opening were solid waste is released

6. Excretory System

Each segment has a pair of nephridia that absorb the extra water from the segment and release it through an opening on the ventral side

7. Nervous System

There are two nerve cords that run along the whole length of the worm’s body. They lay just inside the exterior skin of the worm. They look like thin pieces of dental floss. There is one on the ventral side and one on the dorsal side.

Each segment also has ganglia – a concentration of nerve cords

**Clam Dissection:**

Phylum: Mollusca

Class: Bivalvia – meaning it has two shells

Bilateral Symmetry

Coelomate

1. Support System

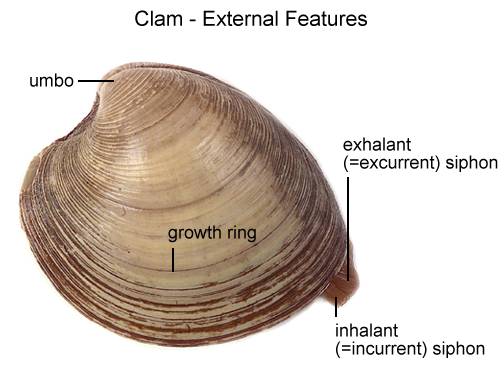
Includes

Muscular System – the clam has a pair of adductor muscles that keep the clam shell closed

Clams have a shell made of calcium carbonate

The top of the shell on the exterior is the umbo

The shell is secreted from the mantle, a thin membrane that lies on both sides of the shell

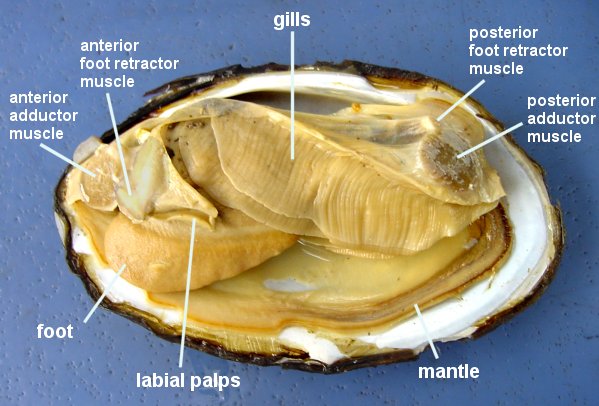


Circulatory System includes:

2. Respiratory System

Clams bring in water through the incurrent siphon over the gills

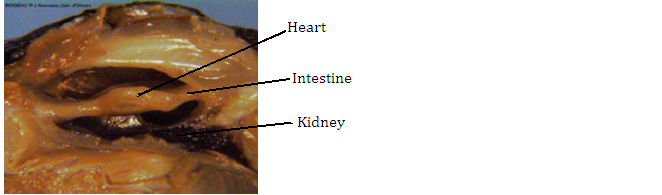
There are two pairs of gills for a total of 4 gills



3. Cardiovascular System

Within the coelom at the top of the clam, just below the point where the two sides of the clams meet. When the coelom is opened up, there is a section of the intestine that flows through the coelom. In the middle of the coelom is the heart.

The Coelom



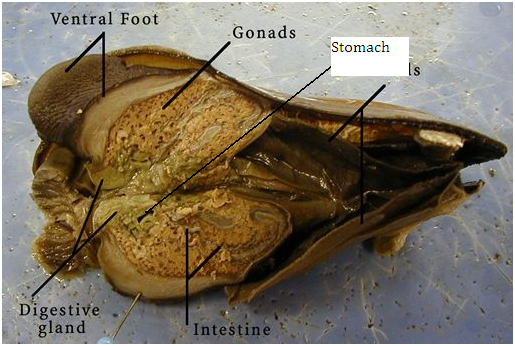
6. Excretory System

The kidney also sits inside the coelom. It is the dark area at the bottom of the coelom.

4. Reproductive System

Within the visceral mass, the majority of the tissue is gonads

5. Digestive System



The mouth is opposite the incurrent siphon. It captures the food and brings it through the

Esopogus to the stomach.

The stomach is surrounded by a digestive gland that produces digestive enzymes to break down the food brought into the stomach.

The food leaves the stomach and travels through the Intestine where nutrients are absorbed.

The intestine travels through the coelom and then ends at the anus.

The anus empties into the excurrent siphon

7. Nervous System

Very difficult to see in the clam. It consists of ganglia and nerve cords.

**Crayfish Dissection:**

Phylum: Annelida

Sub-Phylum: Crustacea

Class: Decapods

Bilateral Symmetry

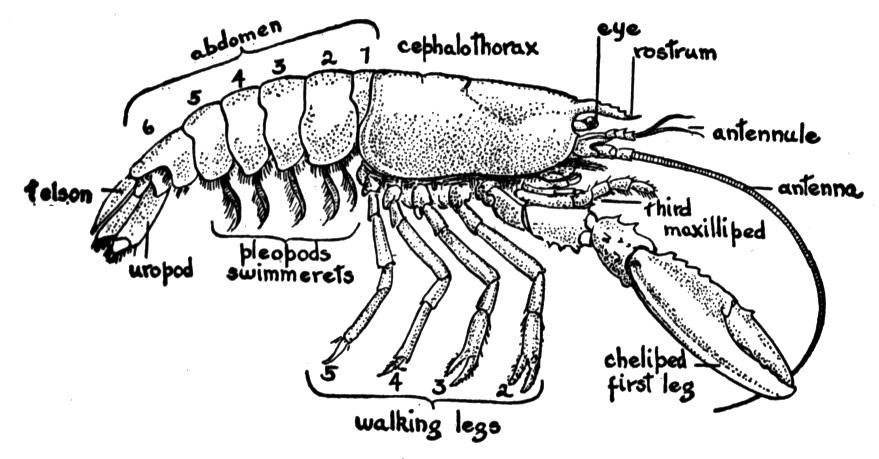
Coelomate

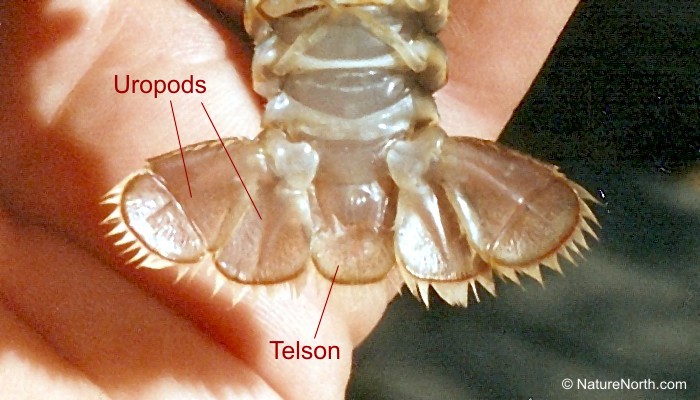
1. Support System

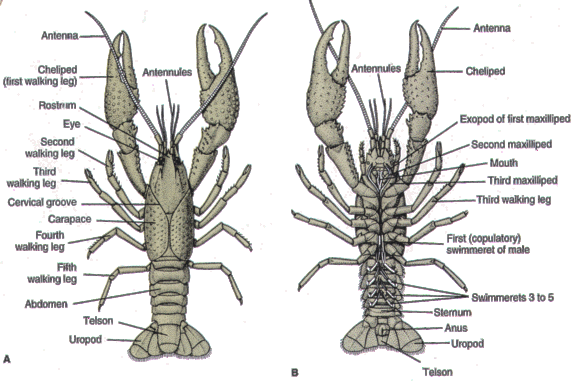
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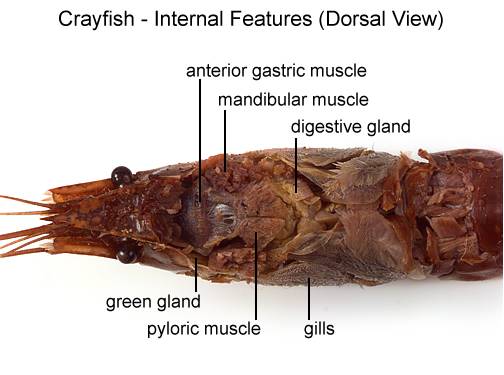
Muscular System – the muscles of the abdomen are the ones usually associated with the part of the shrimp or lobster you eat

Skeletal System – crayfish have an exoskeleton made of Chitin

[](http://shs2.westport.k12.ct.us/mjvl/biology/dissect/crayfish.htm)

[](http://www.naturenorth.com/fall/crayfish/Fcray2.html)

[](http://mcgbiology.wikispaces.com/Crawfish+6)

[](http://www.biologyjunction.com/crayfish_dissection.htm)

Circulatory System includes:

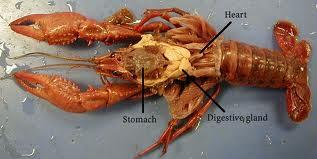
2. Respiratory System

Crayfish breathe through gills on the side of their body. The gills lie under the carapace and are attached to their walking legs. As the crayfish walks, the gills are moved through the water to absorb more dissolved oxygen.

[](http://www.unlv.edu/faculty/lstark/bio197lab/labpics/lab9/lab9pics.htm)

3. Cardiovascular System

The heart of the crayfish lies on the dorsal side of the cephalothorax near the anterior side of the abdomen

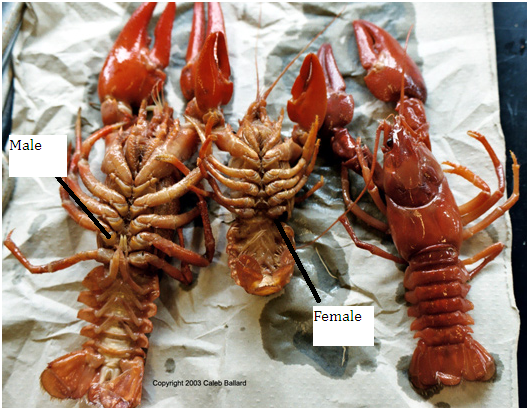
[](http://www.studyblue.com/notes/note/n/2nd-practical/deck/2316884)

4. Reproductive System

Looking at the ventral exterior of your crayfish, you can tell if you have a male or female crayfish by looking at the most anterior set of swimmerets.

Female’s swimmerets remain on the abdomen

Male’s swimmerets have claspers that move up onto the thorax between the walking legs

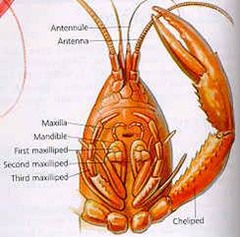


Female gonads will be the ovaries and will be filled with eggs. They lay just anterior to the heart

Male gonads will lie under the heart

5. Digestive System

Mouth – consists of many parts

[](http://quizlet.com/2325364/biology-131-lab-exam-5-flash-cards/)

The mouth leads from the mouth through the esophagus to the stomach.

The first part of the stomach is called the cardiac stomach. This is the holding stomach

The second part of the stomach is the pyloric stomach. It contains teeth to help break down the food.

From the pyloric stomach, the digested food moves through the intestine where the nutrients are absorbed.

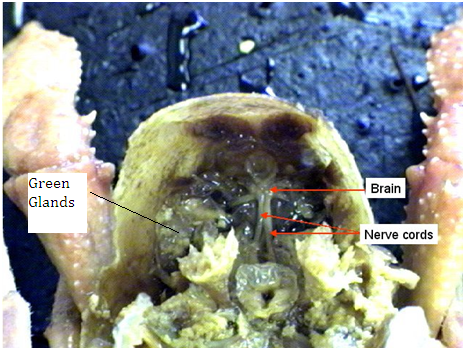
Solid waste is released from the anus located on the telson

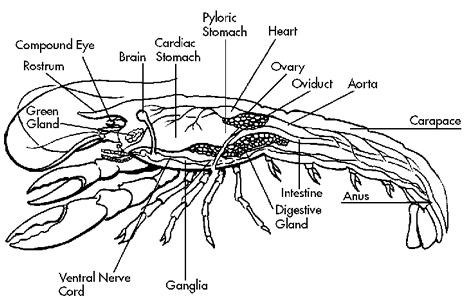
6. Excretory System

The green glands are located near the head, shown in the figure below. The green glands remove excess water from the crayfish. The excess water is released during the “fight or flight” reaction

7. Nervous System

The nerve cords and brain are easily located next to the green glands



[](http://www.picstopin.com/301/crayfish-dissection/http:%7C%7Cwww*middleschoolscience*com%7Cexternal*gif/)