

Crayfish Dissection

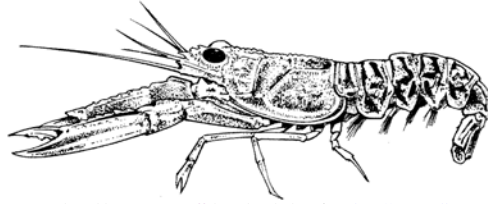


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. . . the term 'roaches of the sea' reflects the behavior of lobsters as omnivorous scavengers. Cockroaches will eat almost anything organic and so will lobsters So much for the delicious taste of lobster?



- Taken from the [Biology Department](#) at the [University of Massachusetts Amherst](#) http://www.bio.umass.edu/biology/kunkel/cockroach_faq.html#Q11

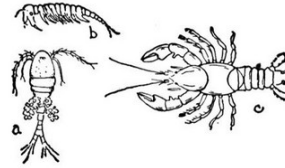


FIG. 10.—Many-jointed animals breathing by blood-gills; (a) microscopic, (b) 1 inch, or (c) several inches long.

Image at right purchased by [Mr. Lazaroff](#), by subscription, from <http://www.clipart.co>

Virtual Crayfish Dissection - Cornell	Virtual Crayfish Dissection - Penn State
<p>Just for Fun . . . visit The Crayfish Corner Images borrowed from the virtual dissection websites above</p>	

By Day: [Day 1](#) [Day 2](#) [Day 3](#)

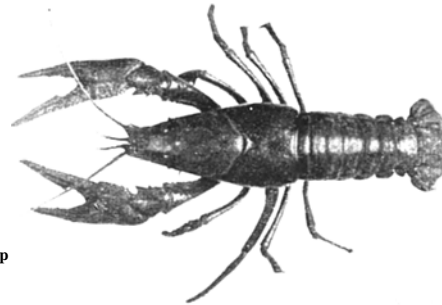
By Topic/Region: [External Anatomy](#) [Internal Anatomy](#)

[Skeletal](#) [Lymphatic](#) [Integumentary](#)
[Cardiovascular](#)
[Muscular](#) [Endocrine](#) [Nervous](#)
[Reproductive](#)
[Respiratory](#) [Excretory](#) [Digestive](#)

S L I C M E N R R E D
 (SLIC Crayfish R RED?)

NOTE: The System in *Italics* above have their functions taken up by other systems.

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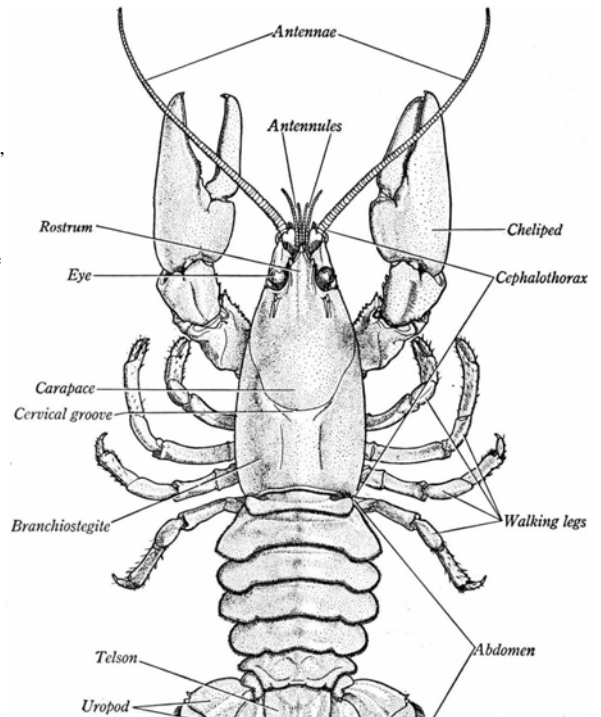
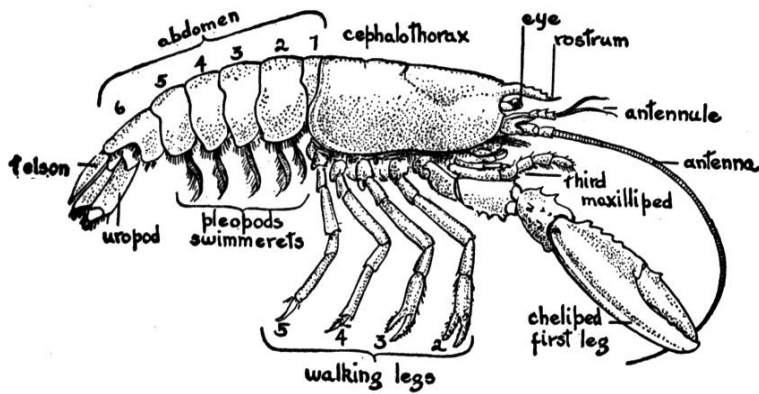
You must create a series of [labeled drawings](#) that illustrate the structures outlined below:

Day 1

I. Abdomen - Ventral View (Day 1) [top](#)

Place the crayfish supine (ventral surface up) on the dissecting tray and **DRAW the following:**

1. Telson (What is the telson's function?)
2. Uropod (Describe the location of the uropods to the telson. How do they add to the telson's function?)
3. Anus (In which of the two structures above did you find the anus? 1 or 2 way digestive system?)
4. Swimmerets - numbered in pairs, 1-5 w/ the 5th one the most posterior (What is their function, and how is it different from the telson's function?)
5. Is your Crayfish a male or a female (Note the anterior-most swimmeret. In the male, its function is to guide the sperm toward the female during copulation; as such, it will be enlarged, and pointed anteriorly in the male. In the female there is no difference between the swimmerets)? (Describe the appearance of the crayfish's swimmerets in your answer.)
6. Walking Legs (How many are there? In terms of this feature alone, is this organism closer to an insect, or an arachnid?)
7. Chelipeds - some people like this meat the best . . . (What is their function?)



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II. Head - Ventral View (Day 1-2) [top](#)

1. Mandibles - 2 - hard & white (What are they equivalent to in humans? How is their action - think direction of movement - different from that of humans?)
2. Maxilla - softer w/ jagged edges (Given the difference in texture, how is their function different from that of the mandibles?)
3. Maxillapeds, or "mouth-feet" -3 pairs (What is their function? Why not use the Chelipeds?)
4. Green Gland Ducts - (From what organ do they open out? What is the equivalent organ in humans? What is the purpose of the duct? Is its location at all disturbing to you?)

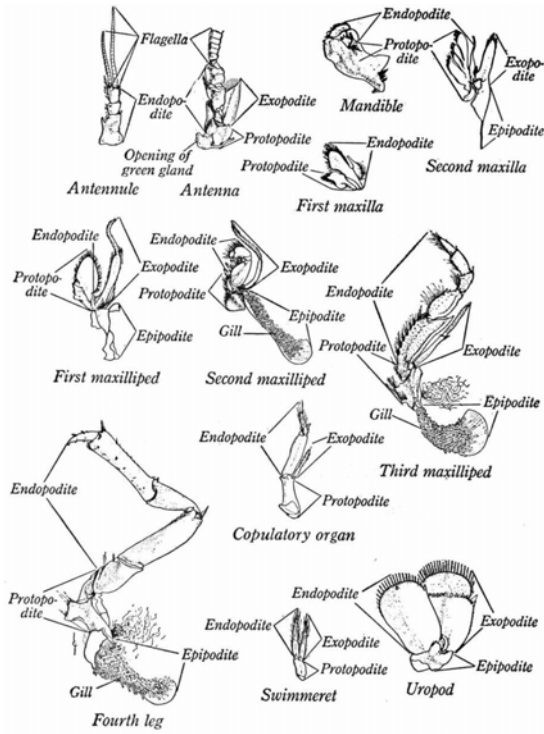


FIG. 246. Typical Appendages of the Crayfish

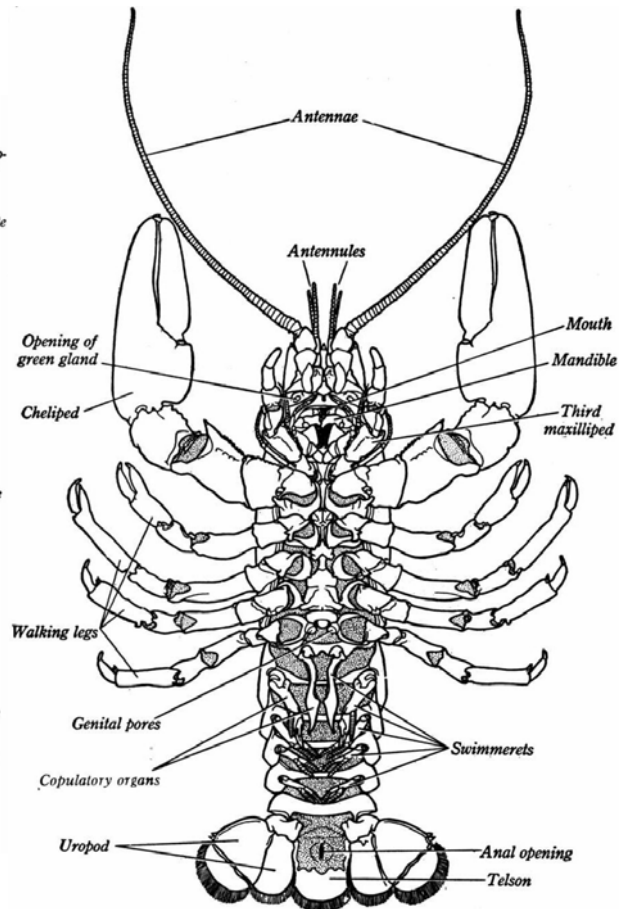
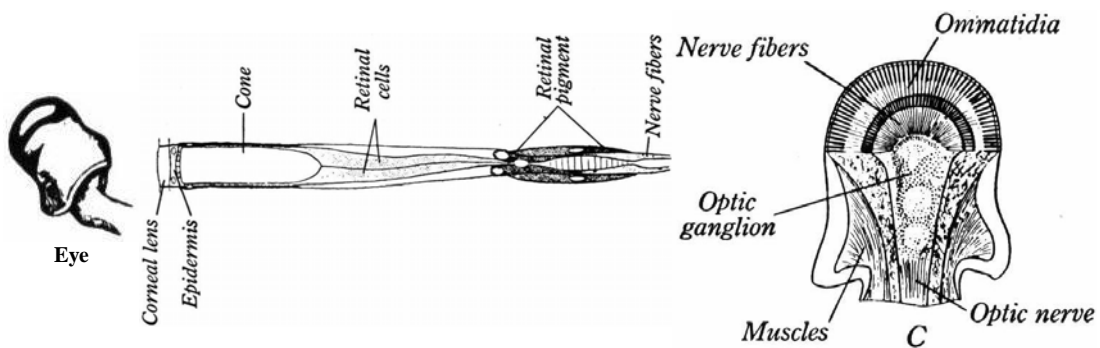


FIG. 245. Ventral View of Male Crayfish, *Potamobius trowbridgei*

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II. Cephalothorax - Dorsal View (Day 1-2) [top](#)

1. Rostrum (What is cephalization? Given that, what organ would you expect to be inside the rostrum?)
2. Eyes (Does this organism have binocular vision - depth perception, why or why not?)



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3. Carapace (What is the function of the carapace? What two body systems in humans perform equivalent functions? The support function is in reference to one system in particular; given the external location of the carapace, explain the name of the type of system compared to our own, internal variety. The support function implies specifically the attachment of organs of what body system to the inside of the carapace?)

Day 2

Make a **Dorsal Midline Incision** from the **posterior** end of the **thorax** to the **posterior** end of the **rostrum** using the rounded scissors w/ the **rounded end down!** Open the carapace and pin it back.

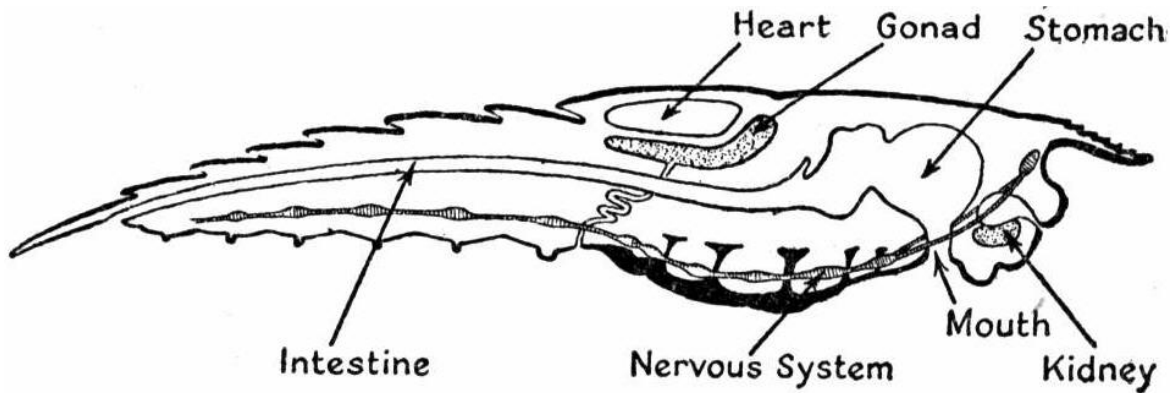


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III. Thorax - Dorsal View, Part I (Day 2) [top](#)

1. Heart & Ostia - the opening on the heart's superior surface (Is this a sign of an open or closed circulatory system? Differentiate between the two in your answer.)
2. Gills (What are they equivalent to in humans? To what body system do they belong? Why are the gills so feathery - i.e., how does this aid in their function?)
3. Cardiac Stomach - draw whole (There appear to be fibers attached to the outside of the stomach. What is their purpose in relation to the stomach and the esophagus?)

IV. Thorax - Dorsal View, Part II (Day 2) [top](#)

1. Remove one gill and draw on **high power** (What is the red/pink material within each "finger" of each gill? How does this material relate to the function of the gill?)

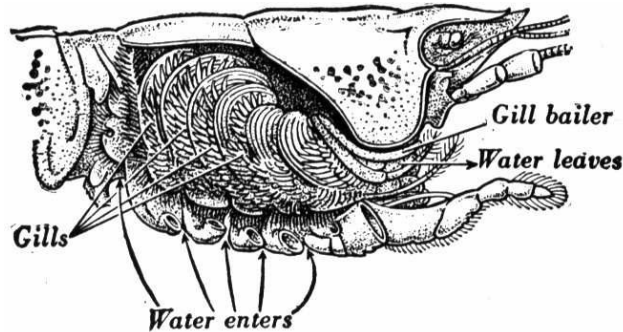


FIG. 249. *Right Branchial Chamber of Crayfish, with Gills for Respiration*¹

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2. **GENTLY** remove one walking leg, and you will see that a gill is attached to each walking leg. (How is this important to the function of the gills? In your answer refer to the different requirements of the body during times of high physical activity, and how they are related to the gill-walking leg connection.)
3. Cut open the Cardiac Stomach and draw the Gastric Mill - reddish-brown lateral "teeth" - on **high power** (What is their function? What type of digestion involves the gastric mill? Do we accomplish that type of digestion in our own stomach?)

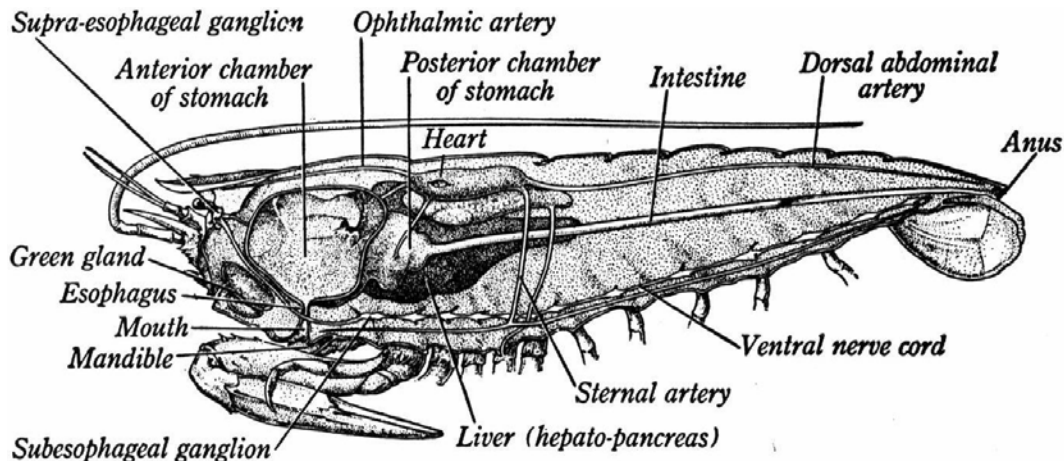


FIG. 248. *Internal Anatomy of the Crayfish*¹

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Day 3

V. Thorax - Dorsal View, Part III (Day 3) [top](#)

Gently remove the **Heart**.

1. The Intestine (Given its location posterior to the stomach, what is its function? What function of the stomach is lacking in the intestine?)
2. The Hepatopancreas Gland (What two organs is this equivalent to in humans? What are some of the functions of this gland? How is its location important to its function?)
3. The Seminiferous Tubules or Ovaries (What is the function of each? To what body system do these belong? Which of the two does your specimen contain? How is this related to the swimmerets?)

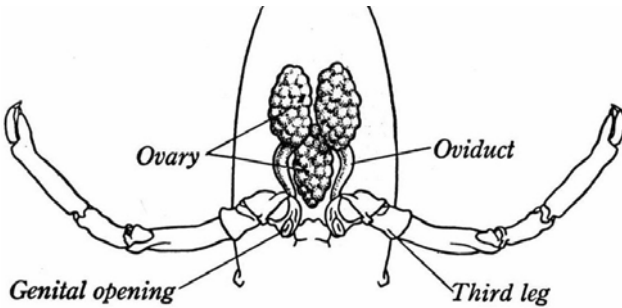


FIG. 253. Female Reproductive System of the Crayfish

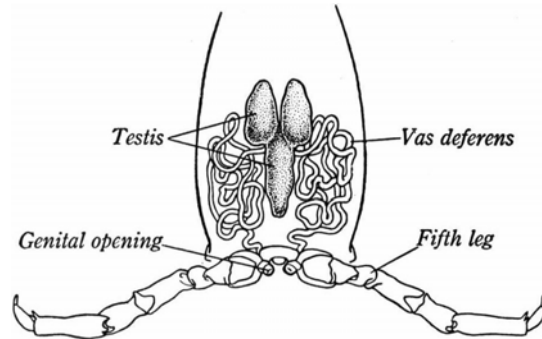


FIG. 252. Male Reproductive System of the Crayfish

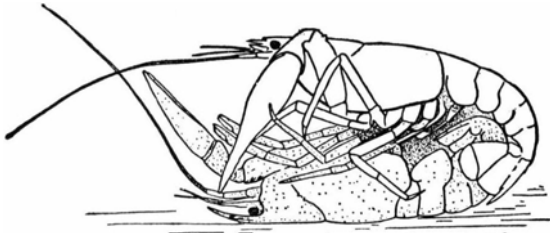


FIG. 254. Copulation among Crayfish¹

The male is transferring the spermatozoa to the female

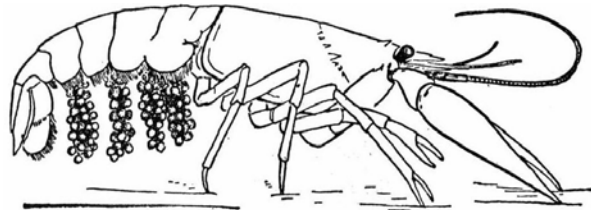
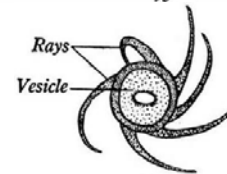
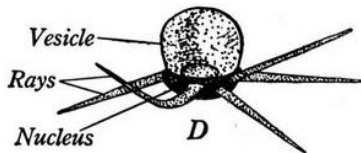


FIG. 255. Fertilized Eggs Attached to the Pleopods of a Female Crayfish¹



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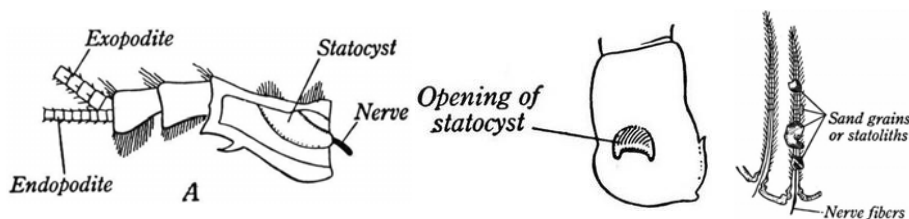
VI. Thorax - Dorsal View, Part IV (Day 3) [top](#)

Gently remove the **Cardiac Stomach**.

1. Esophagus (Describe how its position relative to the stomach is different from the worm and the human.)
2. Green Gland (What is/are the equivalent organ(s) in humans? Do/does the analogous organ(s) appear in pairs in humans? To what body system do the green glands belong? What organ in our equivalent body system is missing in the crayfish?)
3. Brain (Describe the appearance of the brain and the nerves in terms of the type of symmetry. There are nerves that are attached to the front and the back of the brain. Describe the function of both the anterior and the posterior nerve pairs.)

VII. Abdomen - Dorsal View, Part I (Day 3) [top](#)

Make a **Dorsal Midline Incision** from the **anterior** end of the **abdomen** to the **posterior** end of the **abndomen** using the rounded scissors w/ the **rounded end down!** Open the exoskeleton and pin it back.



In order for a Crayfish to determine **BALANCE**, it must **insert** a grain of sand in one of its appendages. Every time it molts and makes a new exoskeleton, it must get a new grain of sand! (In what part of the body is that function taken up by the human body?)

1. Dorsal Blood Vessel (Is this vessel sending the blood to, or away from, the heart? What name would we give to that type of vessel in our body?)
2. Large Intestine (How is the location of this organ related to the name of this section of the body [it is NOT a tail]? What is the function of the large intestine? Given it's contents, is it wise, or unwise, to eat it when eating a lobster? Explain.)
3. Abdominal Flexor Muscles (How do muscles function, by shortening, lengthening, of both? Moving the abdominal flexor muscles will cause flexion, but what is flexion? How will the abdomen - it is NOT a tail - change shape during flexion? What direction will the crayfish move during flexion? Given the size and strength of the muscle, during what circumstances would the crayfish use this muscle over its walking legs?)

VIII. Abdomen - Dorsal View, Part II (Day 3) [top](#)

Gently remove the Abdominal Flexor Muscles.

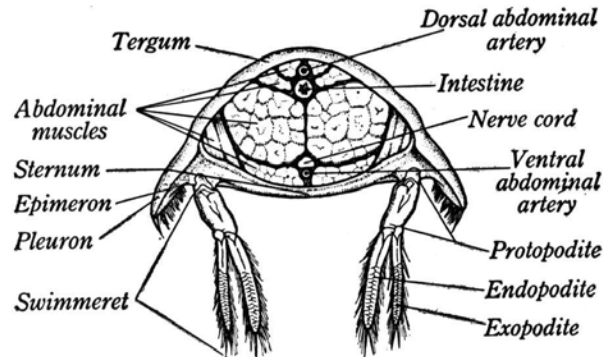


FIG. 247. Cross Section of the Third Abdominal Segment of the Crayfish

1. Ventral Blood Vessels (Given that there is no main ventral blood vessel, how does the blood return to the heart? Is this a sign of an open or closed circulatory system?)
2. Ventral Nerve Cord (To what phylum does the crayfish belong? How is the location of the nerve cord different from creatures in our own phylum? Name our own nerve cord. How is the protection of the nerve cord different in both phyla?)

Drawings:

1. **Use a PENCIL!!**
2. **Make the drawings "larger than life" size, as the specimens are so small.**
3. **Draw the general shape (outline) and location of the organs, as the squiggles so many of you use to "shade" your drawings make your drawings sloppy and hard to interpret.**
4. **Include Labels on all drawings.**
 - **Labels should start outside the drawing, and be connected to the structure by arrows with tips (====>).**
 - **The Tip of the arrow should be touching the structure.**
 - **Be sure to include the magnification for any drawings done with the dissecting microscope.**

Hang on to the drawings; they will all be handed in later, together with some questions to answer.

