Clam Dissection

Introduction
The phylum **Mollusca** includes **snails, clams, chitons, slugs, limpets, octopi, and squid**. As mollusks develop from a fertilized egg to an adult, most pass through a larval stage called the **trocophore**. The trocophore is a **ciliated, free-swimming stage**. Mollusks also have a **radula** or file-like organ for feeding, a **mantle** that may secrete a shell, and a **muscular foot** for locomotion. Clams are marine mollusks with **two valves or shells**. Like all mollusks, a clam has a mantle which surrounds its soft body. It also has a muscular foot which enables the clam to burrow itself in mud or sand. The soft tissue above the foot is called the **visceral mass** and contains the clam's body organs.

Taxonomy
Kingdom – **Animalia**
Phylum – **Mollusca**
Class – **Bivalvia or Pelecypoda**

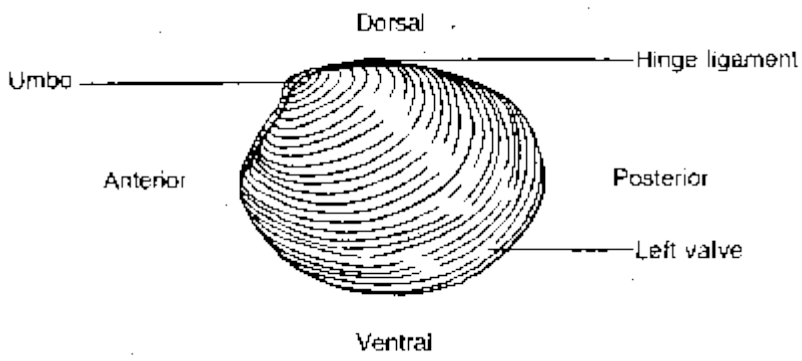
Objective
To study the internal and external anatomy of a bivalve mollusk.

Materials
Dissecting pan, dissecting kit, screwdriver, lab apron, plastic gloves, safety glasses, preserved clam

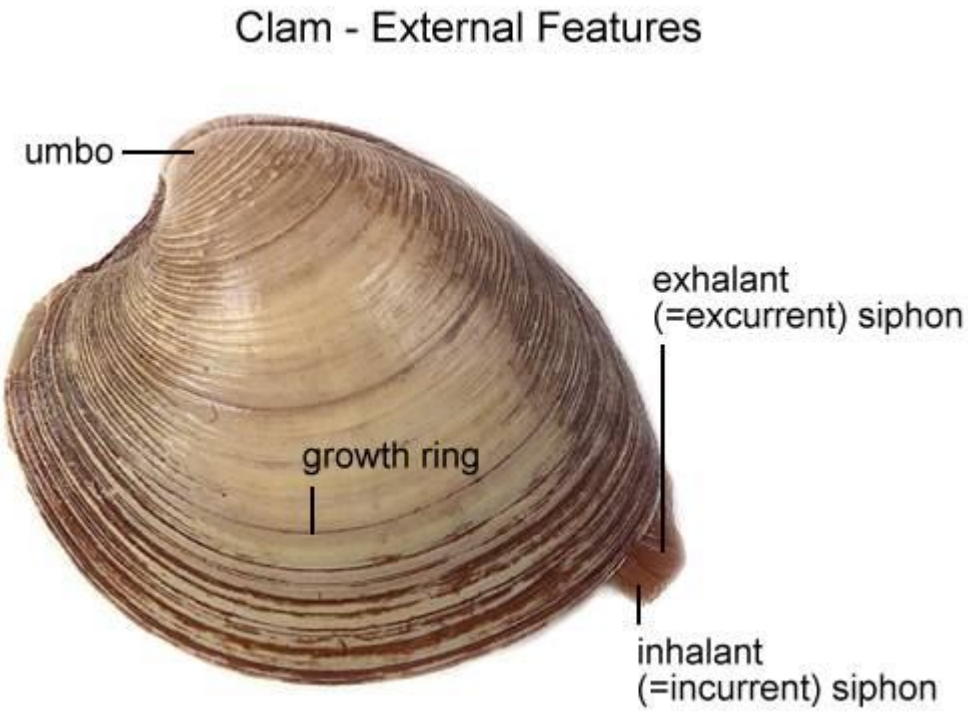
Procedure

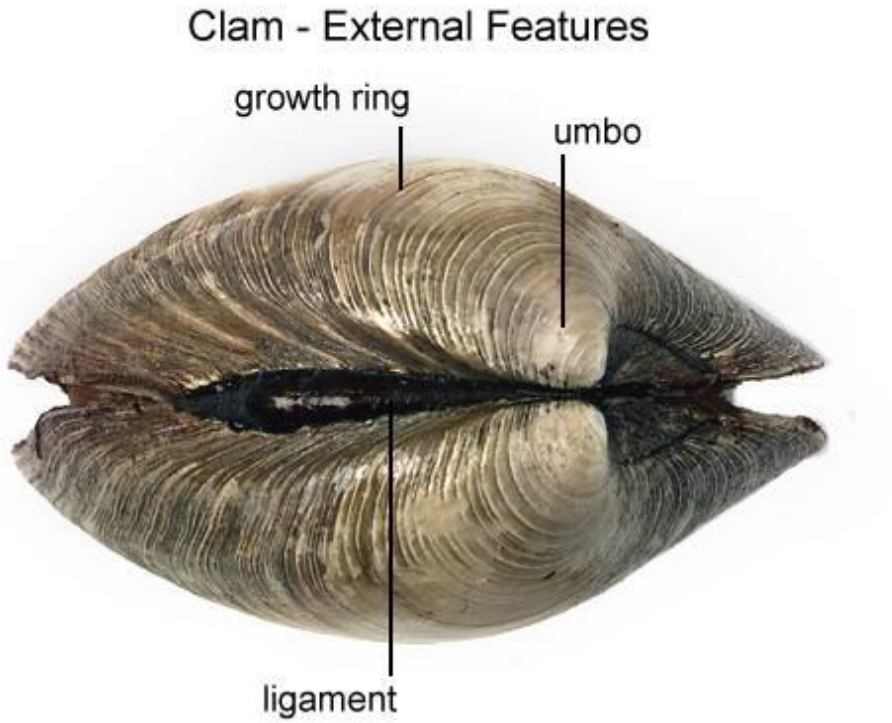
1. Put on your lab apron, safety glasses, and plastic gloves.
2. Place a clam in a dissecting tray and identify the **anterior** and **posterior** ends of the clam as well as the**dorsal, ventral, & lateral surfaces**. Figure 1

Figure 1



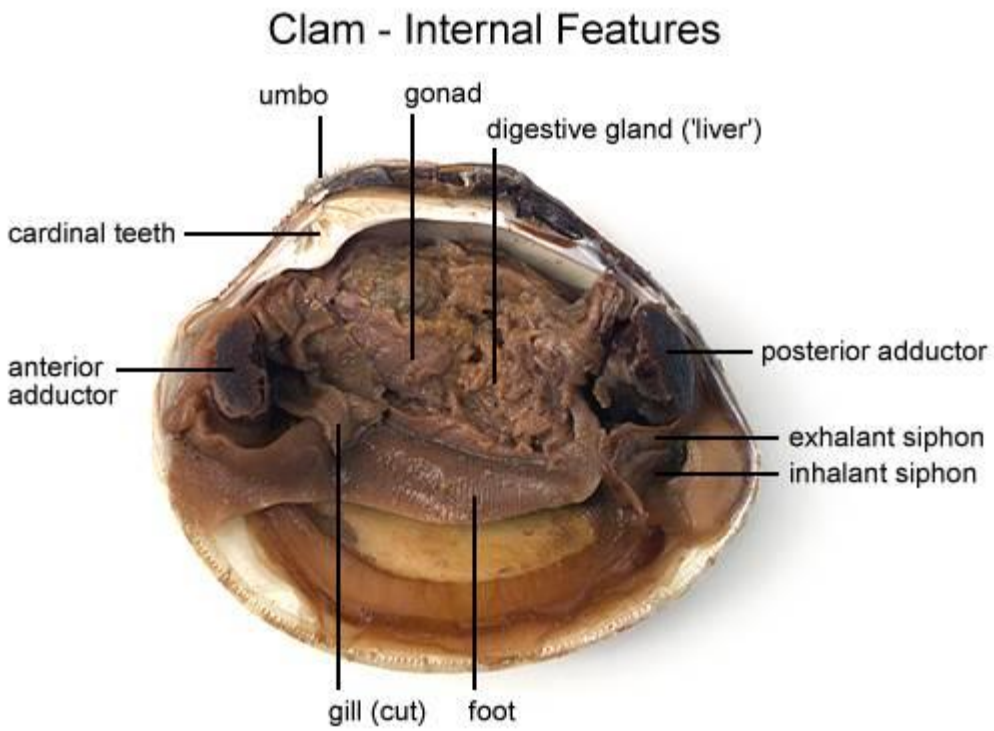
3. Locate the **umbo,** the bump at the anterior end of the valve. This is the oldest part of the clam shell. Find the **hinge ligament** which hinges the valves together and observe the **growth rings**.





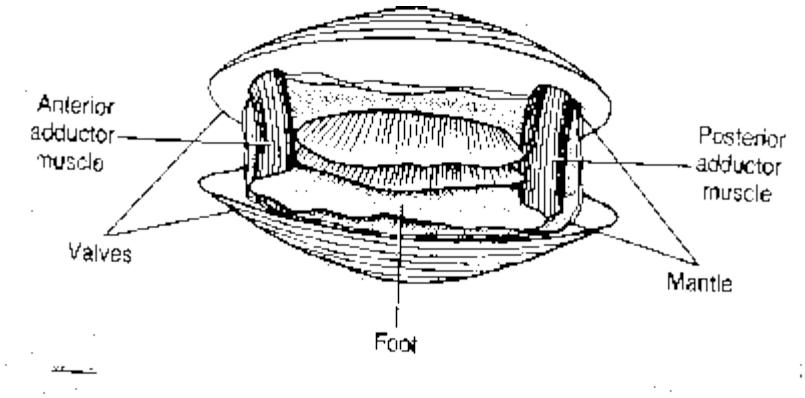
4. Turn the calm with its dorsal side down and insert a screwdriver between the ventral edges of the valves. **Carefully work the tip of the screwdriver between the valves so you do not jab your hand.**

5. Turn the screwdriver so that the valves are about a centimeter apart. Leave the tip of the screwdriver between the valves and place the clam in the pan with the left valve up.
6. Locate the **adductor muscles**. With your blade pointing toward the dorsal edge, slide your scalpel between the upper valve & the top tissue layer. Cut down through the **anterior adductor muscle**, cutting as close to the shell as possible.

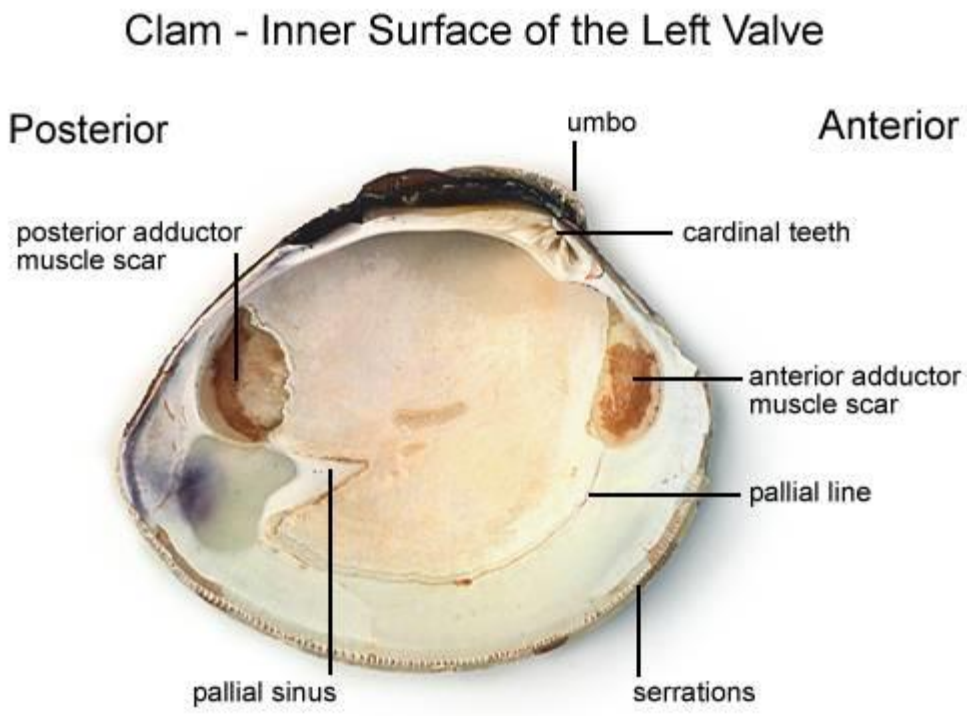


7. Repeat step 6 in cutting the **posterior adductor muscle**. Figure 2

Figure 2



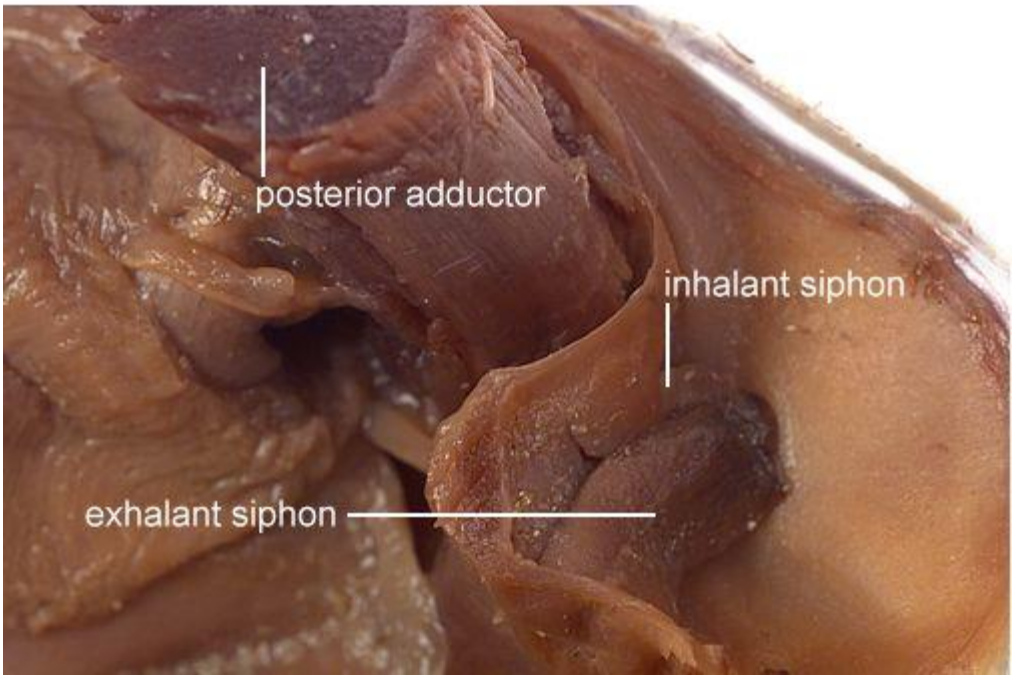
8. Bend the **left valve back** so it lies flat in the tray.
9. Run your fingers along the outside and the inside of the left valve and compare the texture of the two surfaces.



10. Examine the inner dorsal edges of both valves near the umbo and locate the **toothlike projections**. Close the valves & notice how the toothlike projections **interlock**.
11. Locate the **muscle "scars"** on the inner surface of the left valve. The **adductor muscles** were attached here to hold the clam closed.
12. Identify the **mantle**, the tissue that lines both valves & covers the soft body of the clam. Find the **mantle cavity**, the space inside the mantle.

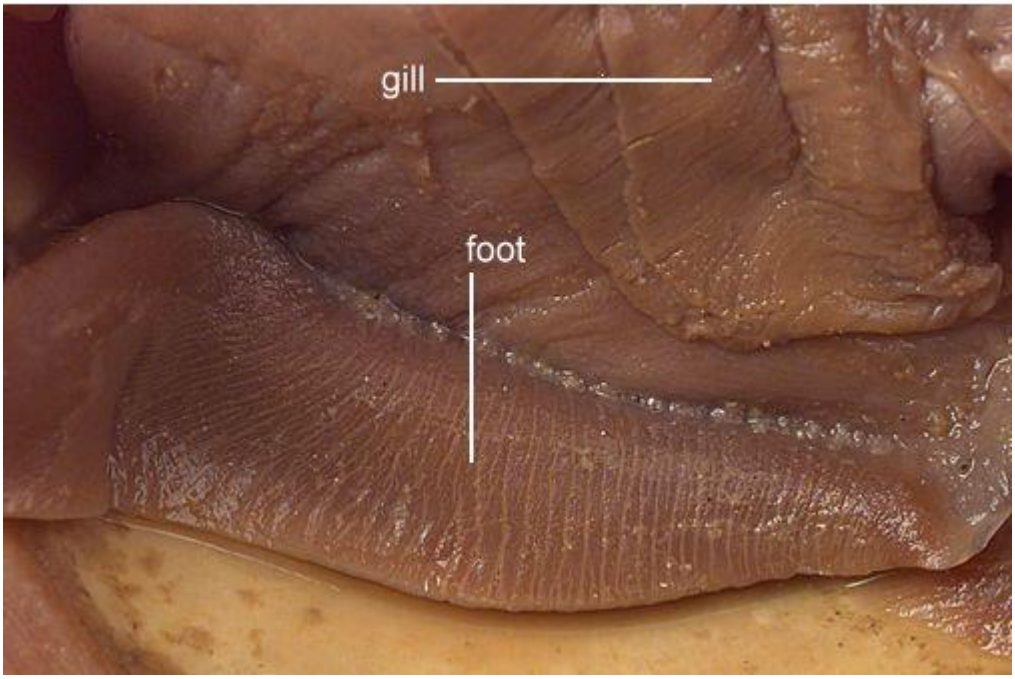
13. Locate two openings on the posterior end of the clam. The more ventral opening is the **incurrent siphon**that carries water into the clam and the more dorsal opening is the **excurrent siphon** where wastes & water leave.

Clam - Siphons (Close Up)



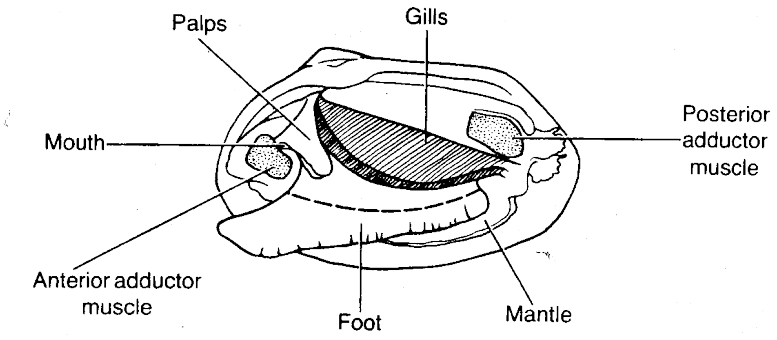
14. With scissors, carefully cut away the half of the mantle that lined the left valve. After removing this part of the mantle, you can see the **gills**, respiratory structures.
15. Observe the **muscular foot** of the clam, which is ventral to the gills. Note the hatchet shape of the foot used to burrow into mud or sand.

Clam - Foot (Close Up)

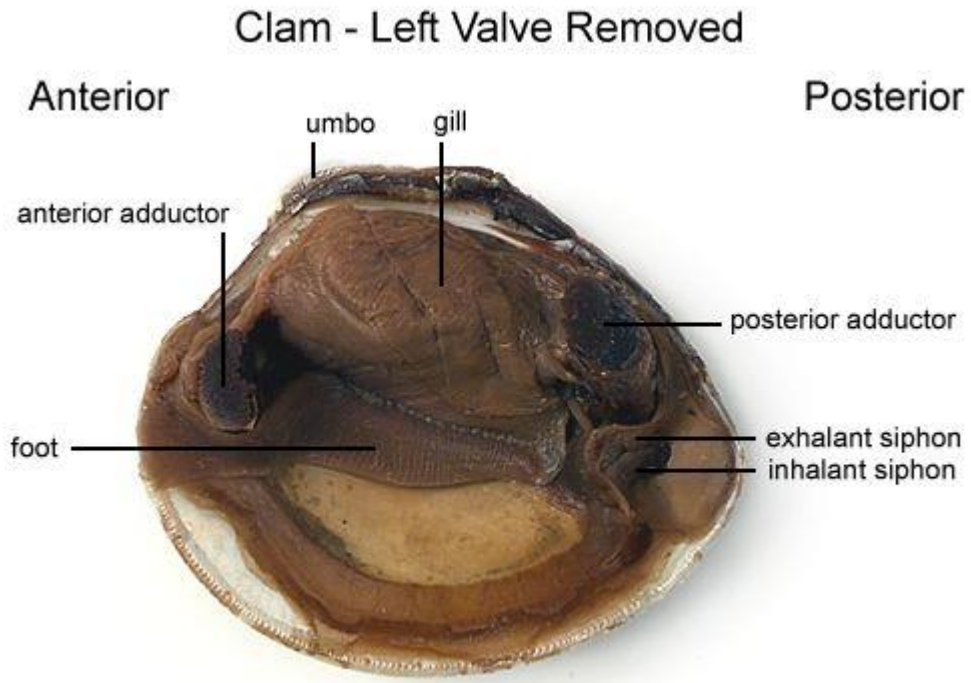


16. Locate the **palps**, flaplike structures that surround & guide food into the clam's mouth. The palps are anterior to the gills & ventral to the anterior adductor muscle. Beneath the palps, find the **mouth**.

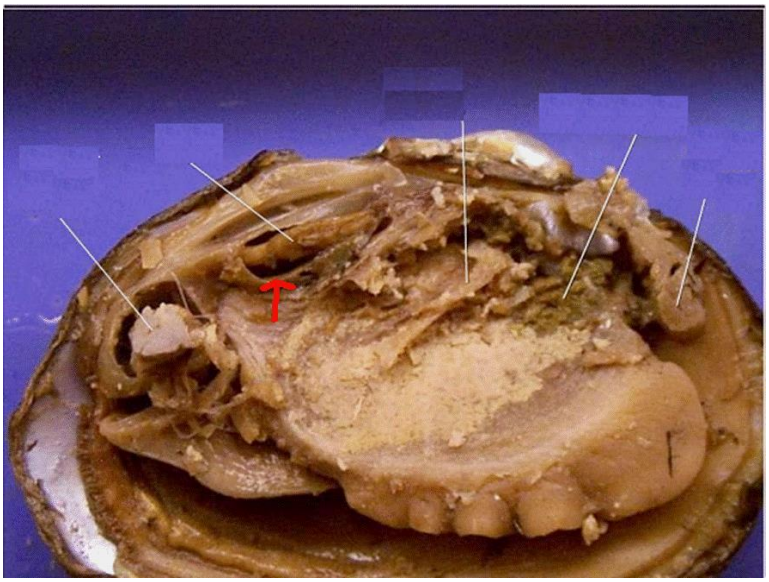
Figure 3



17. With scissors, cut off the **ventral portion of the foot**. Use the scalpel to carefully cut the muscle at the top of the foot into right and left halves.
18. Carefully peel away the muscle layer to view the **internal organs**.



19. Locate the spongy, yellowish **reproductive organs**.
20. Ventral to the umbo, find the **digestive gland**, a greenish structure that surrounds the stomach.
21. Locate the long, coiled **intestine** extending from the stomach.
22. Follow the intestine through the calm. Find the area near the dorsal surface that the intestine passes through called the **pericardial area**. Find the clam's heart in this area.



23. Continue following the intestine toward the posterior end of the clam. Find the **anus** just behind the posterior adductor muscle.
24. Use your probe to trace the path of food & wastes from the incurrent siphon through the clam to the excurrent siphon.