

What's Inside a Freshwater Mussel?

The freshwater mussel has two shells, a right shell and a left shell that are hinged together and held shut by strong **adductor muscles**. Inside the shell there is a thin membrane called the **mantle**. The mantle uses calcium from the water to make the shell.

The freshwater mussel has two tubes called **siphons**; one for sucking water in and the other for spitting it back out. The water drawn in by the inhalant siphon flows over the **gills**, giving the mussel oxygen. Little flaps called **palps** pull microscopic plankton and debris out of the water and pushes that into the mouth. The food is digested by the **stomach/digestive gland**, then moves on into the **intestines**. Finally, it dumps out right near the exit (exhalant) siphon, where it is flushed out.

The freshwater mussel has one **foot**, shaped somewhat like a hatchet. It can stick the foot outside the shell and use it to move around or to burrow itself down into the sand.

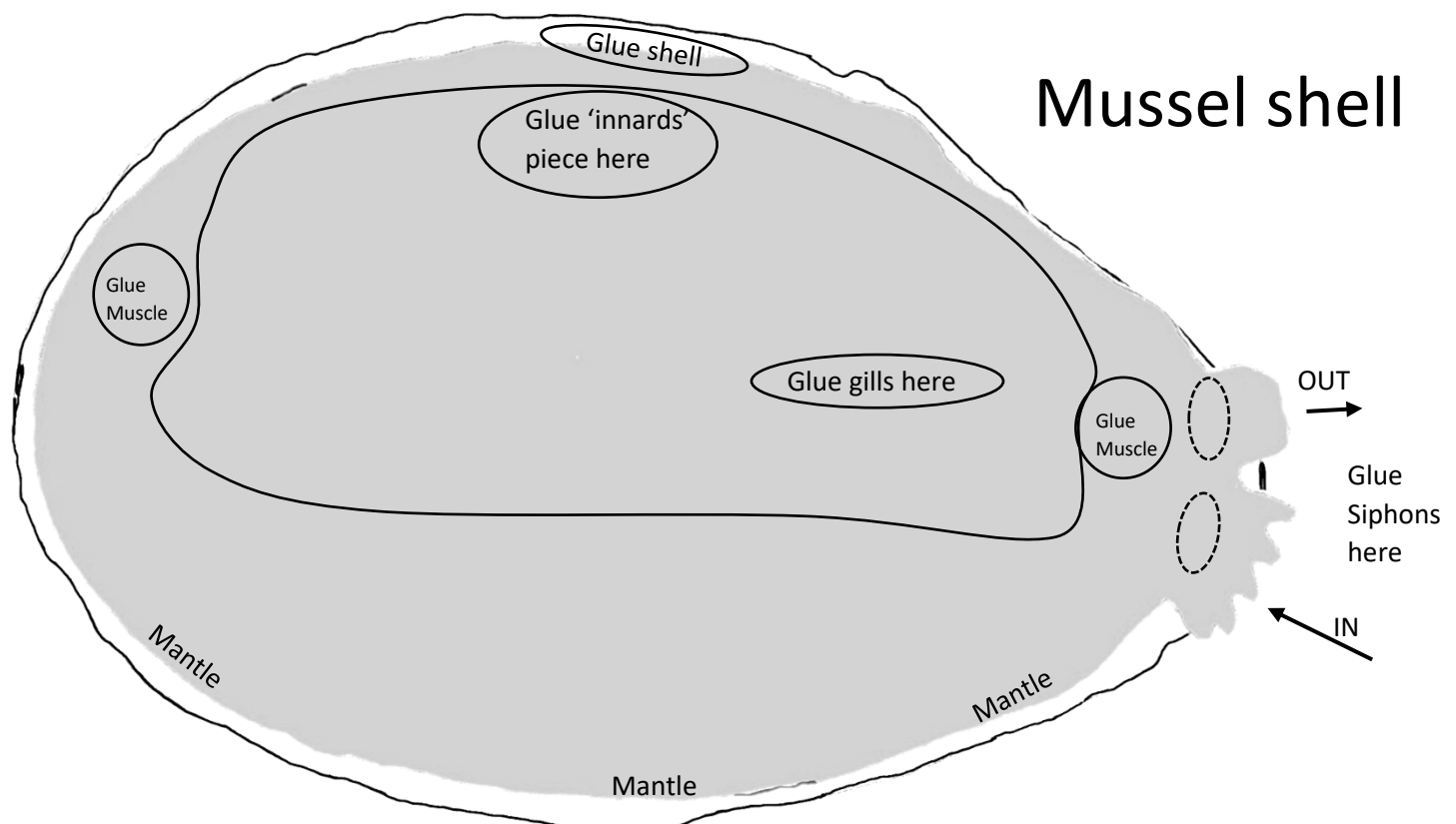
The freshwater mussel has a simple **heart**, but its blood is clear, not red.

Freshwater mussels have separate males and females, and the reproductive glands are called **gonads**. Female freshwater mussels produce little larva (babies) called **glochidia**.

KINGDOM: Animal

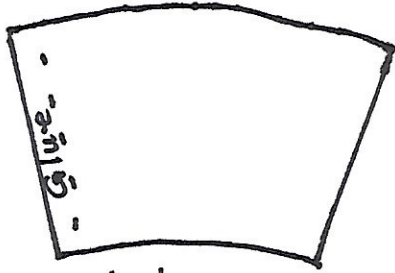
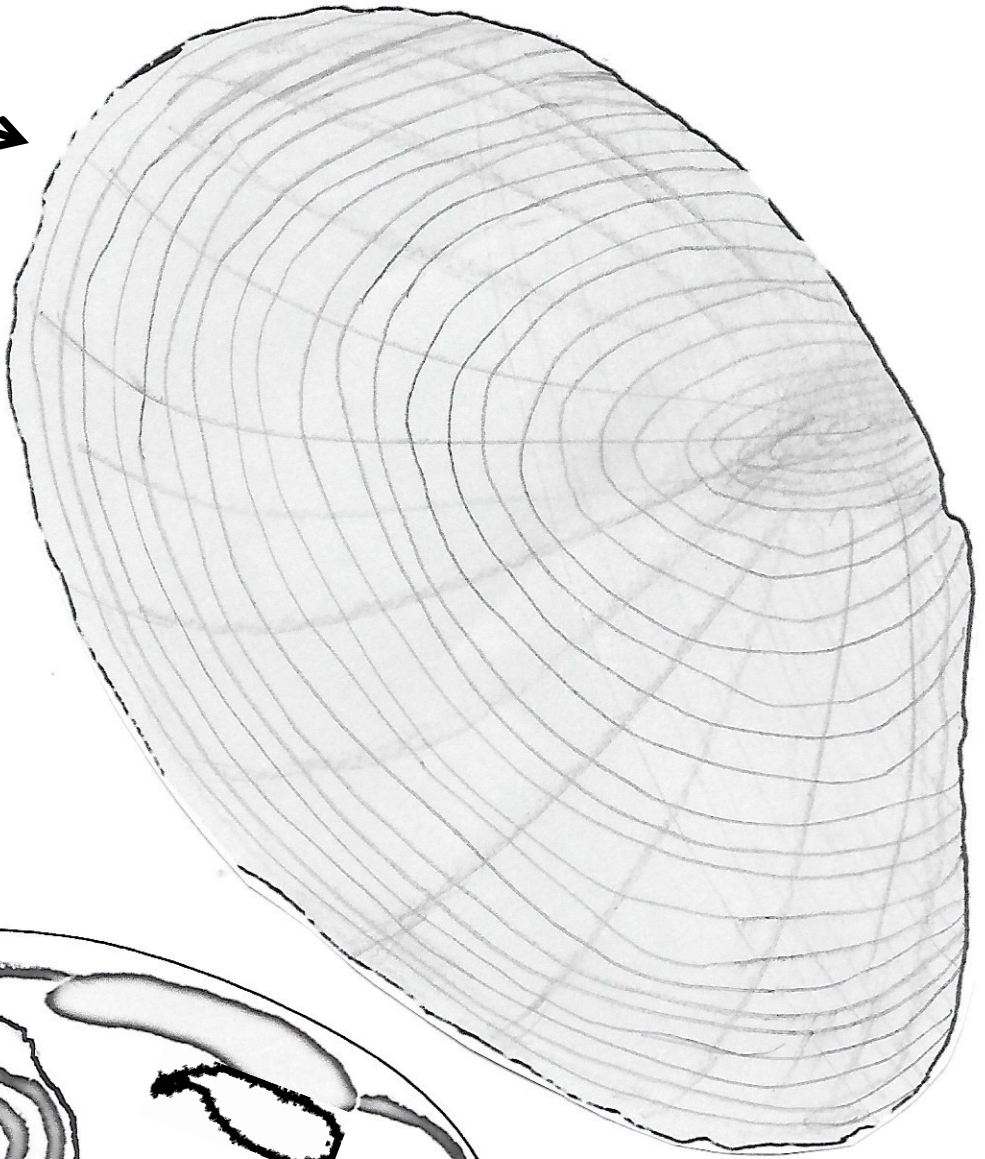
PHYLUM: Mollusca

CLASS: Bivalvia

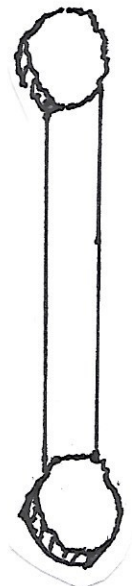
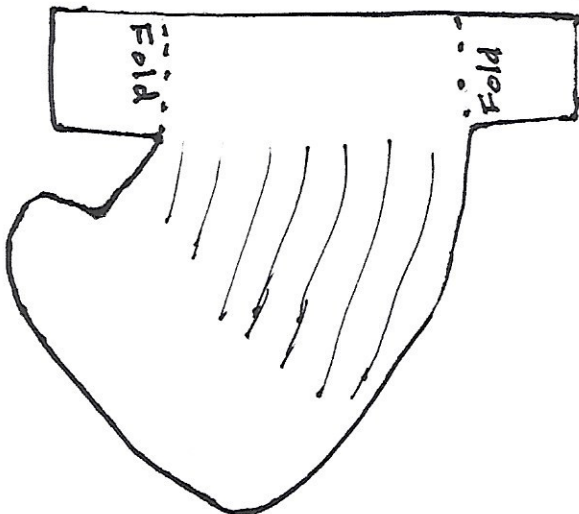
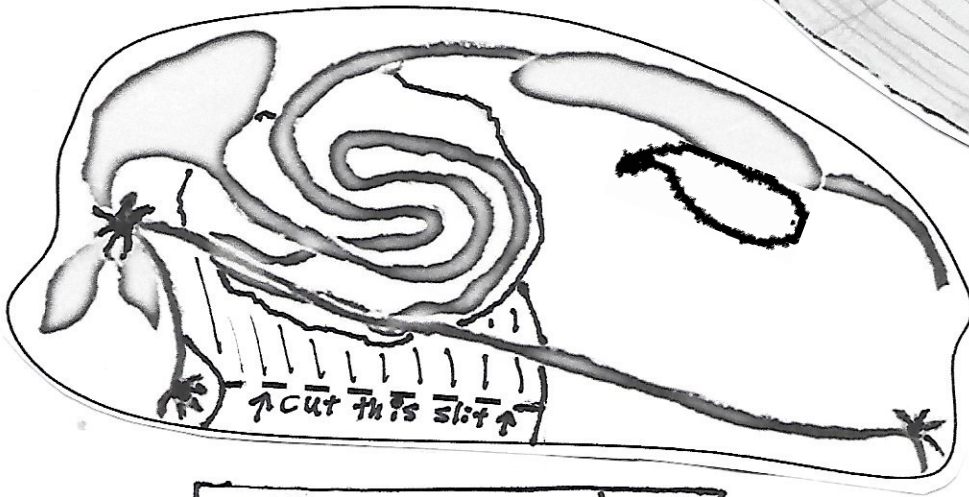
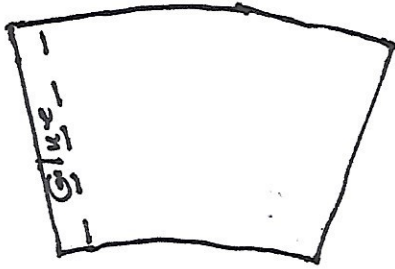


Gill pattern

Cut 2 from tracing paper
or tissue paper

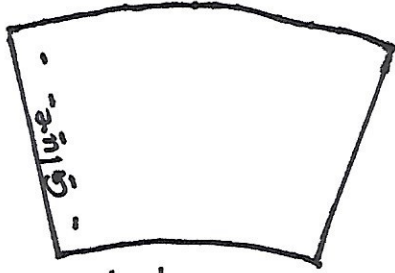


siphons

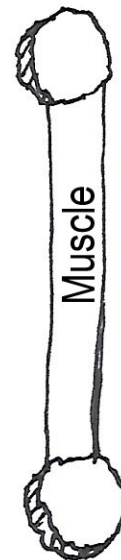
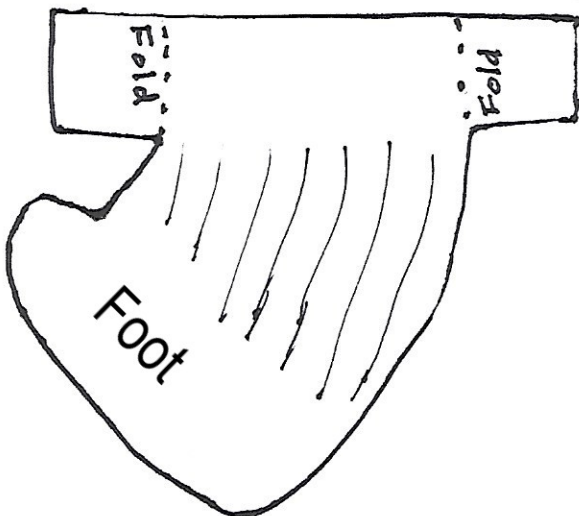
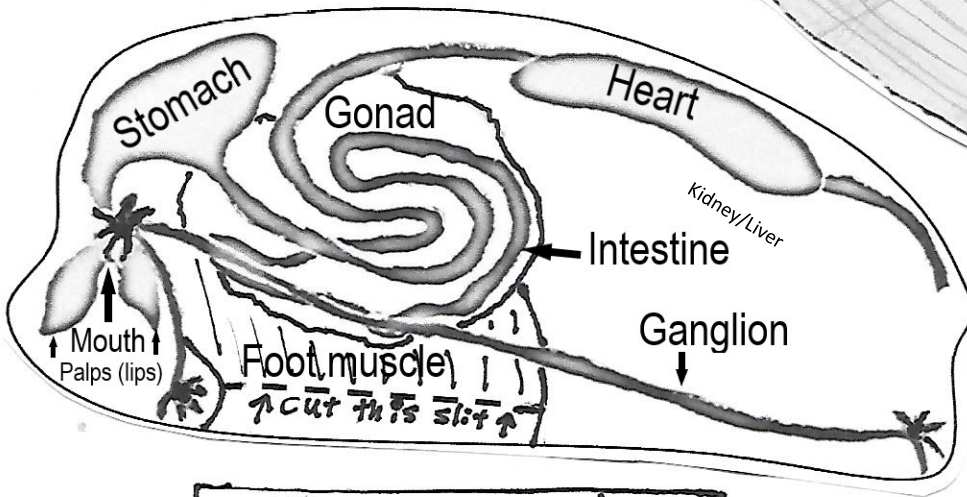
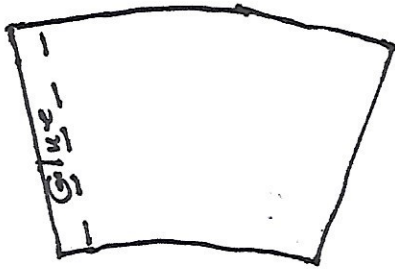


Gill pattern

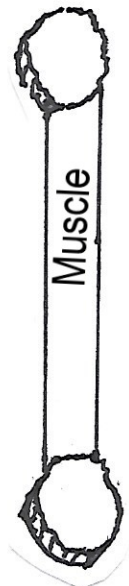
Cut 2 from tracing paper
or tissue paper



Siphons



Muscle



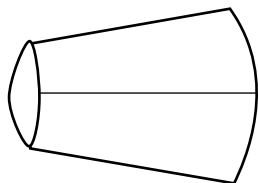
Muscle

MATERIALS FOR CUT-AND-ASSEMBLE FRESHWATER MUSSEL

- Copies of the pattern pages printed onto card stock (or regular paper)
- NOTE: There is a labeled parts page and an unlabeled parts page. The labeled parts may work better with younger children. The unlabeled parts may be appropriate for older children.
- Scissors
- White glue
- Small piece of tracing paper or tissue paper (for gills)
- Optional: colored pencils

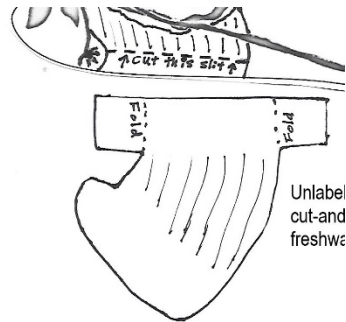
Directions:

1. Do any coloring you want to do. Colored pencils are recommended. Any colors work. Here is one color scheme.
 - Light Gray, Nacre, (the inside of shell. Freshwater mussels have two shells)
 - Orange, Mantle (this makes the shell and is next to the inside of both shells)
 - Purple, Gills (this is how the mussel breathes. There are two gills inside the mantle on both shells)
 - Yellow, Foot (this is how the mussel moves)
 - Light Blue, Kidney and Liver (these help process waste)
 - Pink, Gonad/Genital Gland (this helps the mussel reproduce)
 - Blue, Stomach and Intestines (these absorb food)
 - Red, Heart (this pumps the blood, called hemolymph)
 - Light Green, Adductor Muscles (these hold the shell closed)
 - Green, Ganglion (this controls the mussel's actions)
2. Cut out the shell on page one.
3. Cut out the eight pieces on the parts page (labeled or unlabeled)
4. Use the gill pattern piece to cut 2 gills from tracing paper (If tracing paper is not available try tissue paper, or other thin paper. If no thin paper is available, use one piece regular paper instead of 2 pieces of thin paper.) Write the word "gill" on the gill pieces using a pencil or marker.
5. Put a very small amount of glue along the line where it says glue gills. Place a gill piece on the line. Glue the second gill piece right on top of the first one. Now you should have two tracing paper flaps.
6. Form the siphons by rolling the pieces into a cone-shaped cylinder and securing with a small amount of white glue. To get the seam to stick tightly, flatten the siphon and hold the seam shut for about 10 seconds. Siphon should then pop open again, although in a flattened state, which is fine because it will have to be flattened anyway.

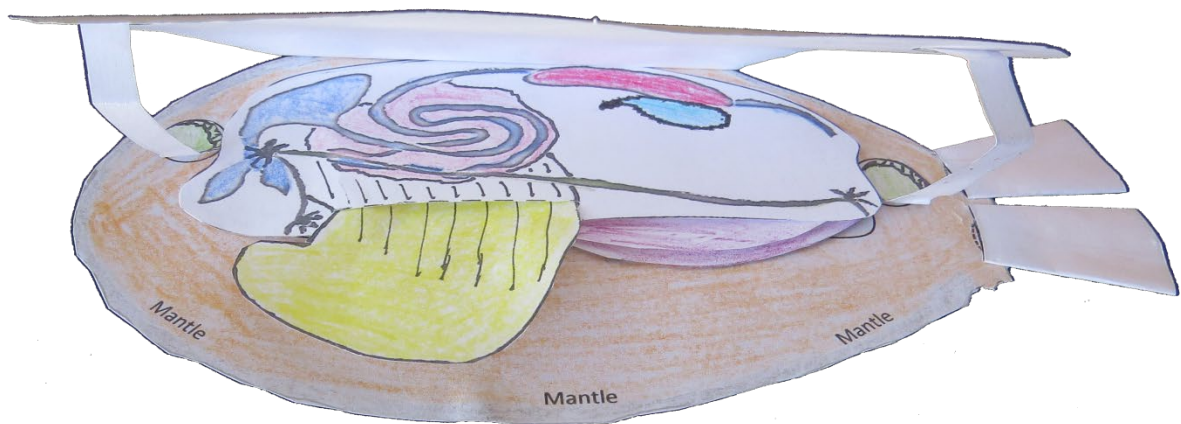


Flatten and press along seam

7. Now glue the siphons in place on the freshwater mussel. Siphons will be flattened but not totally flat. In some freshwater mussels this area of the mantle is adapted to look like a small fish to lure in host fish for the release of glochidia.
8. Cut the slit at the bottom of the foot muscle on the 'innards' piece using scissors.
9. Insert foot piece by bending the flaps temporarily for insertion. Open the flaps after the foot has been inserted into the slot. The foot is now a moveable piece that can go in and out of the shell, like a real freshwater mussel's foot!



10. Glue "innards" piece onto sheet where indicated.
11. Notice the ganglion. The freshwater mussel does not have a brain. It simply has three spots where nerves connect.
12. Glue one end of each adductor (shell closing) muscles in place where indicated on freshwater mussel. Other end should remain sticking up into the air.
13. Glue top shell pieces on where indicated, just at the very top. Press and let dry a minute or two.
14. Glue the other end of the adductor muscles to the underside of the top shell as shown in illustration. Top shell will be propped open. Let glue dry a bit before trying to close shell.
15. Gently bend the muscles forward while closing top shell. When you open the shell again, the muscles should pop back into place and prop the shell open again.



Adapted 2020 from ellenjmchenry.com <http://ellenjmchenry.com/cut-and-assemble-paper-clam-showing-inside-anatomy/>