Oyster Anatomy and Aquarium Demonstration

Please make sure that you have finished the introduction worksheet before continuing.

This lesson will primarily focus on the oyster's ability to filter food out of the water. Before we begin the aquarium demonstration we should learn about oyster anatomy. Attached is an oyster cut out. It is important that you follow the directions step-by-step.

First, we will need to color all the pictures as stated below before we cut them out.

The Valves (A)

1. The shell is very important to the oyster. What a lot of people do not know is that the shell of the oyster is made up of two sections called **VALVES**. There is a right valve and a left valve. Why do you think the shell is important?

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Color the two valves **BROWN**.

2. The next figure is the inside of the two valves. Notice the two large dark semi-circle shape objects. This is where the **ADDUCTOR MUSCLE** was attached. An oyster uses the adductor muscle to close the two valves tight allowing nothing to enter.

The Adductor Muscle (C)

Color the location where the adductor muscle attaches **PURPLE**. We will keep the inside of the valves white.

3. The next picture is the actual adductor muscle that you will attach later on.

Color the adductor muscle **TAN**.

The Mantle (D)

4. The next picture shows the **MANTLE**. The mantle is a very important organ to the oyster because it helps build new shell, is touch sensitive, stores

nutrients, and helps the oyster breath. Notice how the mantle has little points on the edge. Those are called tentacles and they are very sensitive to touch.

Color the mantle **PINK.**

The Circulatory System (E)

5. This figure shows a simplified circulatory system of the oyster. The heart is represented by the letters "V" and "A" (the Ventricle and Atrium) and pumps blood through the veins that are shaded darker. The veins coming from the Atrium go into the gills to pick up oxygen. The veins going out of the Ventricle deliver the oxygen to the rest of the body.

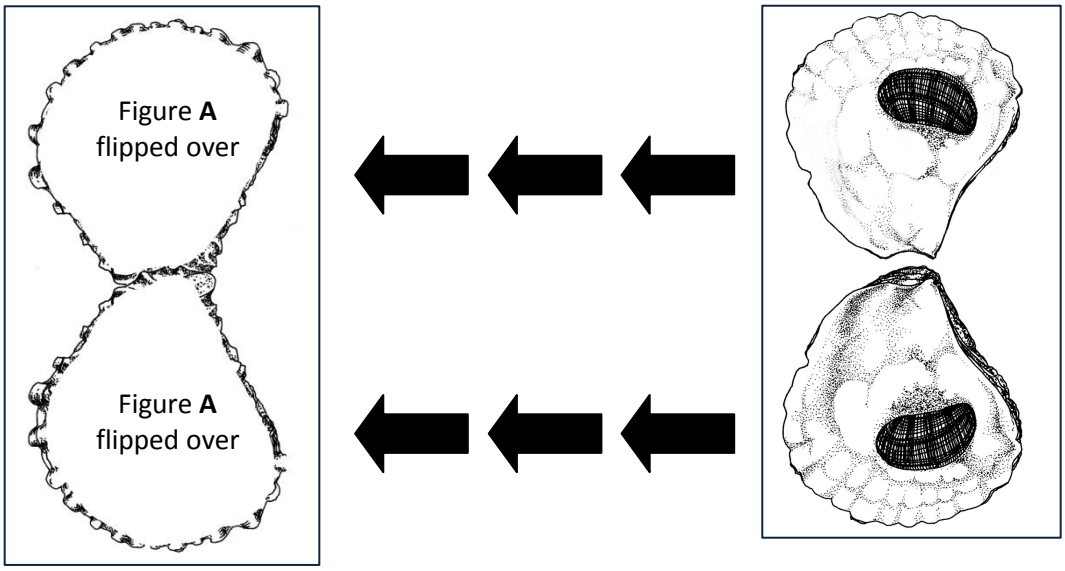
Very carefully color in the circulatory system **RED**.

The Digestive System (F)

6. This figure shows the **DIGESTIVE SYSTEM** and the **GILLS**. The gills are long and have stripes. What you cannot see in the picture is that along these stripes there are tiny little tentacles called **CILIA**. Cilia are responsible for moving water into the shell, passing that water through the gills, capturing food, and passing food to the **MOUTH**. The mouth is found at the very top of this picture. Once food enters the mouth it goes into the **STOMACH**. The stomach looks like a chewed up piece of gum. If you keep following it down it goes into a tube which is called the **INTESTINE**. The intestine leads to the **RECTUM** and then food comes out of the **ANUS**, and is expelled into the **CLOACA**. Once here it is pushed out with water that has already been filtered.

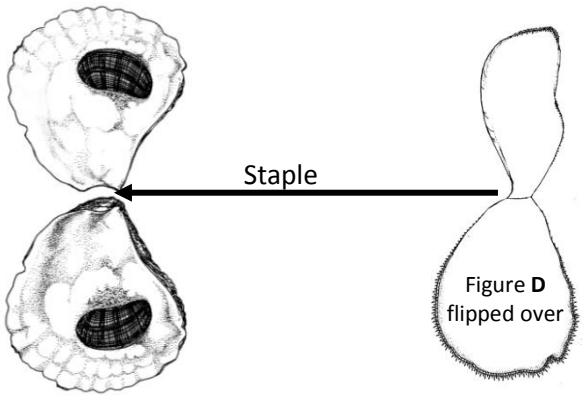
Color the gills **BLUE**. Color the digestive system **YELLOW**. Note that the cloaca is not really a part of the digestive system; it is just a chamber where the anus is located.

7. Now it is time to cut out the oyster and put it together. You are going to need scissors, a glue stick, and a stapler. First cut out **A.** Then cut out **B**. Glue **B** onto **A** as shown in the diagram.



8. Cut out figure **C**, but hold off before gluing that down anywhere.

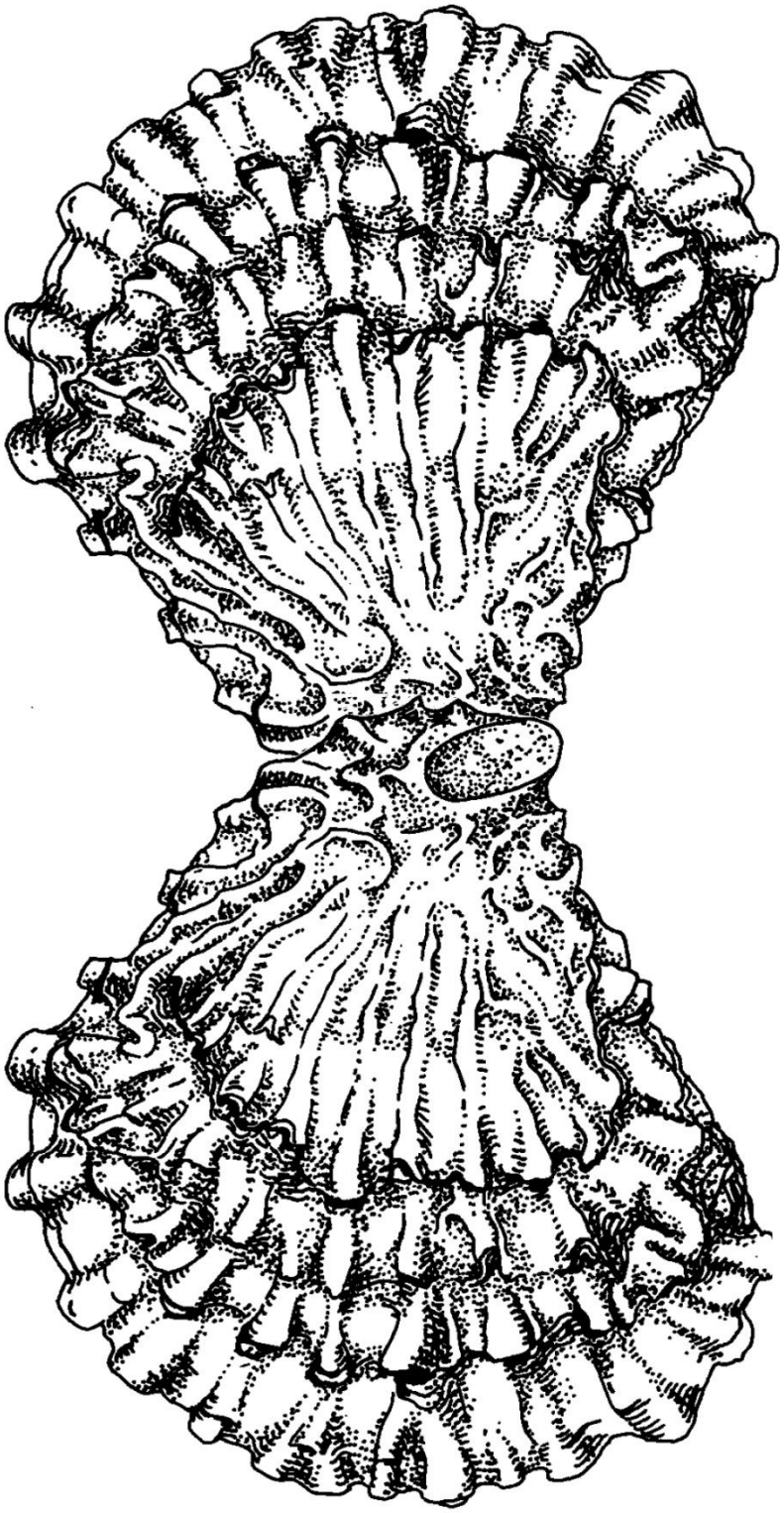
9. Next cut out figures **D**, **E**, and **F**, and very carefully cut out the area that is shaded with tiny polka dots. This will allow for the adductor muscle to pass through them. Staple figure **D** inside of the shell as demonstrated below.



10. Then glue the tab of figure **E** onto the mantle making it fit within the shell. Do the same to figure **F**. Try to make the cut out areas line up so that the adductor muscle can fit through. Once figures **E** and **F** are dry, fold the adductor muscles at the dotted lines. Then glue one end to the adductor muscle attachment spot you colored purple on the left valve. After that, poke the muscle through the opening you cut and glue it to the area on the right valve that you colored purple. Now you have a complete oyster.

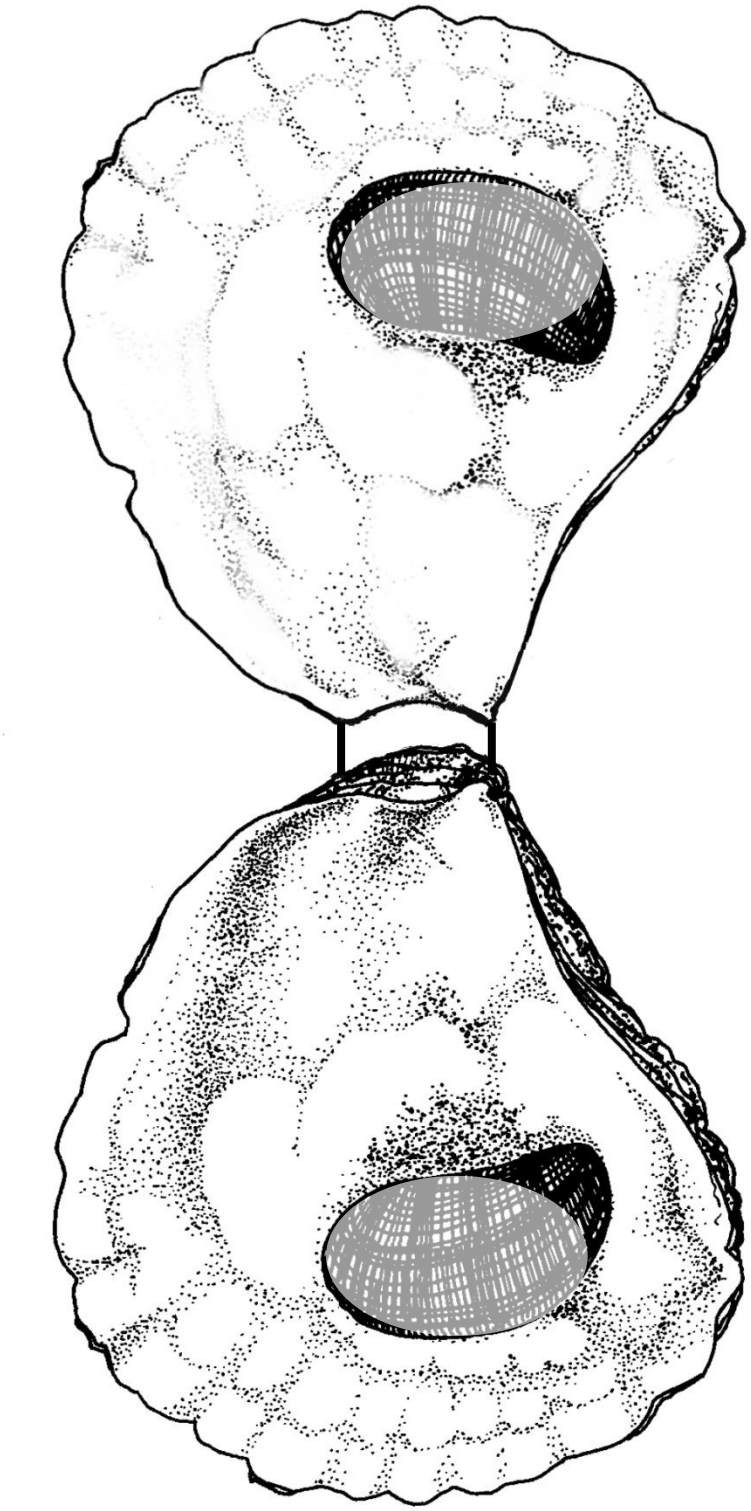
All pictures were developed from artist renderings of the Eastern Oyster from Galtsoff (1964).

Galtsoff, P. S. (1964). "The American Oyster *Crassostrea virginica* Gmelin", Bureau of Commercial Fisheries, (ed.). City: Fishery Bulletin, pp. 1-480.

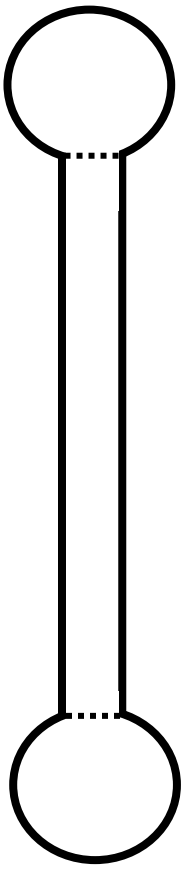


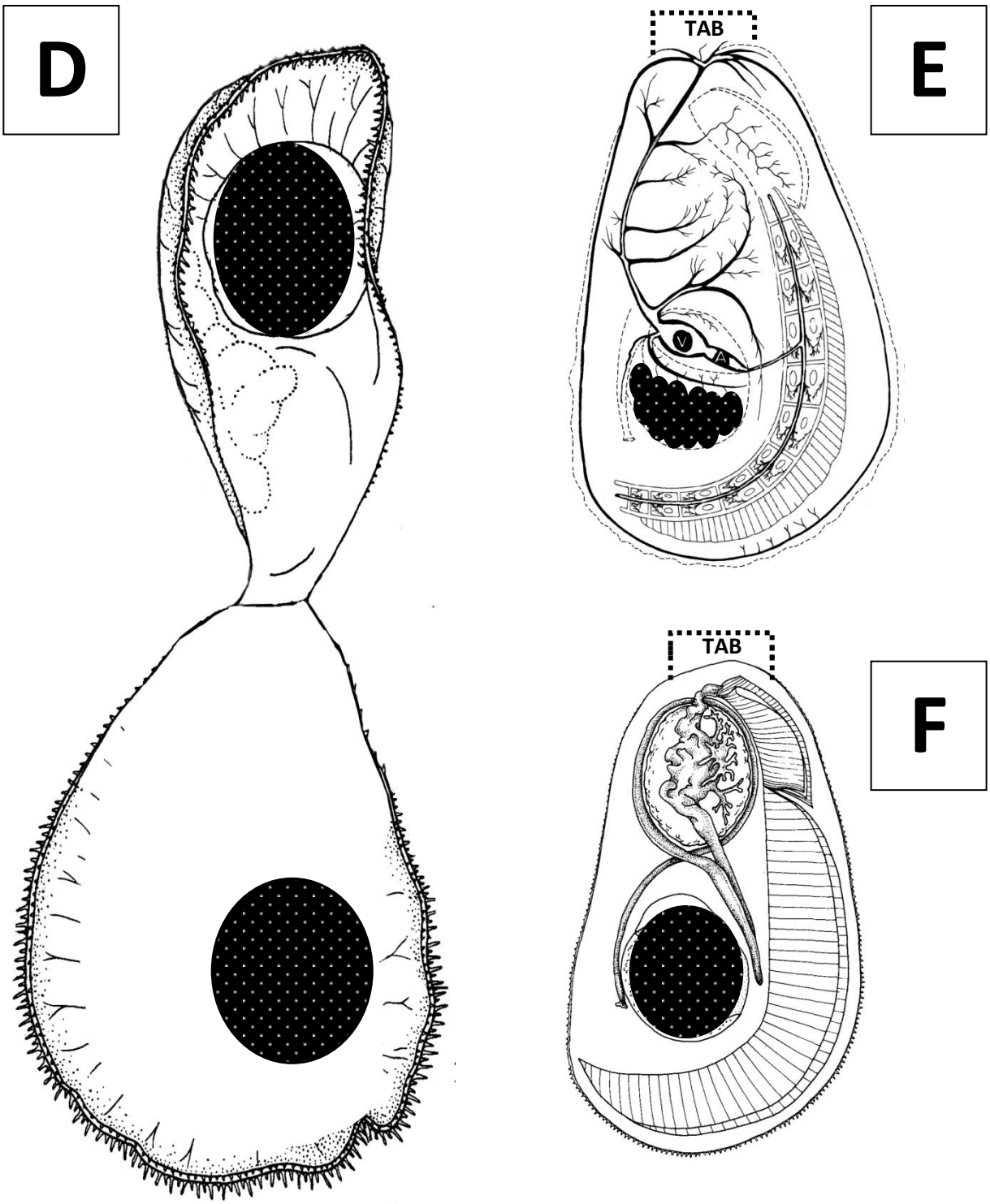
A

B



C




D
TAB
E
V
A
TAB
F