

Investigation 8.A: Identifying Structures of the Circulatory System

Question: What features of a mammalian heart can you identify in a real or virtual heart? What route does blood take through the heart?

Safety Precautions



- Be extremely careful when using dissecting instruments, particularly scalpels. Wherever possible, make cuts away from your body.
- The hearts are preserved in a chemical solution. Wear plastic gloves, safety glasses, and an apron at all times, and work in a well-ventilated area. If some of the chemical comes in contact with your skin, wash it off. At the end of the investigation or class, wash your hands thoroughly.
- Dispose of all materials as instructed by your teacher, and clean your work area.

Materials

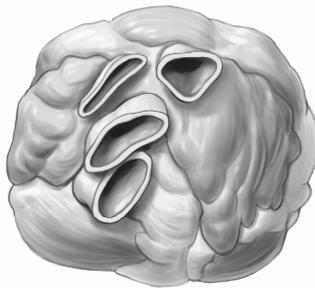
- disposable plastic gloves
- dissecting instruments
- apron
- large tongs
- safety glasses
- dissecting tray
- preserved sheep heart (or another mammalian heart)
- plastic bag and tie (to store the heart if necessary)
- newspapers and/or paper towels

Procedure

1. Obtain a preserved sheep's heart, and observe its external features. Rinse the heart thoroughly with water. This will remove any excess preservatives. Observe the pericardium, which is the sac surrounding the heart. If it is still attached, remove it. Note the fatty tissue accumulated on the heart. This is usually found along the edges of the heart chambers and surrounding the coronary arteries. Remove as much of the fatty tissue as possible.
2. Identify the apex, or pointed bottom, of the heart.
3. Use the illustrations below and Figure 8.2 in your textbook to help you locate the following structures:
 - a) the aorta
 - b) the superior vena cava
 - c) the pulmonary artery
 - d) the pulmonary vein
 - e) the inferior vena cava



The external view of a sheep's heart



The large vessels of a sheep's heart



The internal features of a sheep's heart

CHAPTER 8	Investigation 8.A: Identifying Structures of the Circulatory System (cont'd)	BLM 8.1.4
HANDOUT		

4. Begin a frontal cut through the heart at the apex, and move toward the base. Open the heart, and identify the chambers on the lower left and right sides. These are the left and right ventricles. There is a thick muscular structure separating the two ventricles. This is the septum. Identify the right and left atria, located above the ventricles. Compare the structures of the different chambers of the heart. Make a labelled drawing, and describe the structures in your own words.
5. The ventricles are separated from the atria above them by the atrioventricular valves. Identify these valves. You should also be able to see strong fibrous strings, called the chordae tendineae. Identify the left atrioventricular valve, which has two flaps or cusps, and the right atrioventricular valve, which has three cusps.

CHAPTER 8	Investigation 8.A: Identifying Structures of the Circulatory System (cont'd)	BLM 8.1.4
HANDOUT		

6. Complete a labelled drawing of your specimen, showing the external and internal features of the heart.

Analysis

1. Explain how the appearance of the following structures relates to their function as part of the circulatory system. Give as much detail as possible, including size, texture, external structure, and internal structure.
 - a) right atrium

CHAPTER 8	Investigation 8.A: Identifying Structures of the Circulatory System (cont'd)	BLM 8.1.4
HANDOUT		

b) left atrium

c) right ventricle

d) arteries, including the aorta

e) left ventricle

CHAPTER 8	Investigation 8.A: Identifying Structures of the Circulatory System (cont'd)	BLM 8.1.4
HANDOUT		

f) veins

g) heart valves

2. Using your own drawings and your current understanding of the route that blood takes through the body, trace the movement of blood from the tissues through the heart and back to the tissues. Start with the superior and inferior vena cavae.

