**Dissection of the mammalian heart STUDENT**

**Introduction**

In this activity, you will be looking at the external appearance and internal structures of a mammalian heart. In doing this, you will be able to compare certain structures and gain experience of observing and drawing scientific diagrams. You will be expected to gain some basic dissection skills.

**Aims**

* To examine the main blood vessels of the heart and the coronary arteries*.*
* To carry out a detailed examination of the differences between the heart chambers and walls between them*.*
* To produce scientific annotated drawings of the dissected mammalian heart*.*

**Intended class time**

* 1 hour

**Equipment**

* Heart from a mammal
* Tray lined with tissue / dissection board
* Scalpel
* Mounted needle
* Scissors
* Disinfectant in beaker for discarded dissection instruments
* Disposable gloves (non-latex)
* 30cm ruler

**Health & Safety**

Take care when using the sharp dissecting instruments. Non-latex gloves are provided. Please follow the guidelines given to you by your teacher as to how to dispose of the waste from this practical.

**Procedure**

1. Spend some time examining the external surfaces of the heart and place your fingers inside the 4 chambers to feel the differences in the thicknesses of the walls. Do not make any cuts at this stage.
2. Identify the coronary artery on the external surface and locate where it comes from the aorta. If necessary, trim fat away using the scissors.
3. Use the information you have gained from steps 1 and 2 to position your heart on the dissecting board. Make sure you know which the left side of the heart is and which the right is.
4. Watch a demonstration from your teacher to show the location of the main cut and then use scissors to cut through the wall of the left atrium. Follow the cut down to the apex (bottom tip) of the left ventricle. Open up the left atrium and left ventricle to examine them.
5. Look for the tendinous cords (also called the heart strings) and how they are attached to the atrioventricular valve. The valve on this side has two flaps so is called the bicuspid valve.
6. It may be possible to see a different valve in the aorta. It is called the semi-lunar valve due to its half-moon shape.
7. Make a similar cut down the right side of the heart to open up the right atrium and ventricle. Spend some time examining the wall and internal structures.
8. Look for the atrioventricular valve on this side. It has three flaps so is called the tricuspid valve. Look for the semi-lunar valve.
9. Use a ruler to measure the thicknesses of the wall of the left and right atria and ventricles and record these values in a suitably designed table.
10. Produce a detailed scientific annotated drawing. Carefully arrange the dissected heart so that all the structures that you have identified can be easily seen. An annotated diagram should have detail about each structure added beside each label.

**Extension questions**

1. Blood leaves the kidney via the renal vein and eventually returns to the heart. This blood will pass through a number of blood vessels, organs and chambers of the heart before it returns to the kidney via the renal vein. Name the blood vessels, organs and chambers of the heart, in the correct order.
2. (a) Calculate how many times thicker the right ventricle is compared to the right atrium.
3. Calculate how many times thicker the left ventricle is compared to the right ventricle.
4. Explain your answers to (a) and (b).
5. What is the function of the atrioventricular valves?
6. (a) Describe the role of the coronary arteries.

(b) What are the possible consequences of a blockage in a coronary artery?

**To submit**

For this piece of work to count towards Practical Activity Group 2 of the Practical Endorsement, you should have evidence of annotated drawings of the internal structures of the dissected heart that you have seen and identified and measurements of the thicknesses of the chambers of the heart as described above. You also need to have considered the above questions as the answers to these questions will aid you in preparation for your written examinations.