**Dissection of animal heart**

**Learning objectives:**

* To identify the coronary arteries
* To examine the position of the atrio-ventricular valves and semi-lunar valves where possible
* To examine the chambers within the heart noticing the differences between the right and left hand sides of the heart
* To label the different parts of the heart
* To develop practical skills h, j and begin to demonstrate competencies 1a, 3a

**Heart Dissection**

You are provided with the following:

* a sheep’s heart
* dissecting tray and board
* dissecting instruments
* labels and pins.

For this practical you must perform a risk assessment. It provides a useful opportunity to:

* + identify any significant hazards associated with the practical activity
	+ suggest appropriate and reasonable measures required to reduce risk to an acceptable level

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| --- | --- | --- |
| Hazard | Risk associated with Hazard | Method to reduce risk |
| 1. |  |  |
| 2. |  |  |
| 3. |  |  |

**You should read these instructions carefully before you start work**.

1. Before you cut the heart examine its external features.

* Identify the coronary arteries.
* Run water into the top of the heart and see if you can see the valves in the aorta and pulmonary arteries close.
* Squeeze the heart gently and these valves should open and the water will come out.

2. Cut down each side of the heart to open up the left atrium and left ventricle and the right atrium and right ventricle.

* Look for the tendinous cords holding the atrio-ventricular valves, and lift the weight of the heart by holding one of these cords over a dissecting needle.
* Look how thin the atrio-ventricular valves are.
* Examine the thickness of the walls of the ventricles.
* Which side is thicker, and why?
* Look at the walls of the atria, they are much thinner, can you think why?
* Push the handle of the dissecting needle up behind the atrio-ventricular valves. You should notice that the aorta and pulmonary arteries cross over.

3. Make some little flags from pins and sticky labels and label the parts of the heart that you can identify. Make sure they are legible and visible as you look down on your dissection.

Ask your tutor to check your labeling and take a photograph so you can include it in your notes.

Packing away:

* Remove all pins and discard labels.
* Place pins and dissecting instruments in the beaker with disinfectant.
* Place the heart in the disposal bag on the trolley.

Use the disinfectant spray to clean the dissecting board and bench, using paper towels to dry them. Dispose of the towels in the disposal bag along with your plastic gloves.

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|  | Competencies |
| 1. Follows written procedures | a. Correctly follows instructions to carry out experimental techniques or procedures. |
| 3. Safely uses a range of practical equipment and materials | a. Identifies hazards and assesses risks associated with these hazards, making safety adjustments as necessary, when carrying out experimental techniques and procedures in the lab or field.  |
|  | Apparatus and techniques |
| AT h | safely and ethically use organisms to measure:* plant or animal responses
* physiological functions
 |
| AT j | safely use instruments for dissection of an animal organ, or plant organ |

**A-level Biology required practical No. 5**

**Teachers’ Notes**

**Dissection of animal or plant gas exchange or mass transport system or of organ within such a system**

**Heart Dissection**

**Materials**

* a sheep’s heart (better if these are obtained from the abattoir than butcher’s shop as more of the arteries and veins and atria are likely to be present)
* dissecting tray and board
* dissecting instruments (essentials are scalpel, scissors, mounted needles)
* labels and pins
* disinfectant in a large beaker and disinfectant spray and paper towels.

**Health and Safety**

Lab coats should be worn by all students handling the hearts. Gloves are not necessary, but if used the teacher should ensure that they are removed immediately after the work and disposed of with the paper towels/heart remains.

Ensure cuts to skin are covered with waterproof dressings, and everyone involved in the heart dissection washes their hands thoroughly with bactericidal hand wash after the activity.

* Dissecting instruments are sharp and should be handled with care at all times. Dispose of used instruments into beaker of disinfectant. 1% VirKon or 70% IDA/ethanol (for metal instruments) should be used as the disinfectant. All instruments and surfaces used should be washed thoroughly with detergent solution, and only afterwards disinfected if considered necessary. All organic matter should be removed from instruments and surfaces immediately after the dissection.
* Dissected hearts should be carefully wrapped and placed in a bin directly collected by refuse collectors on the day of refuse collection. The hearts should be stored in a freezer (or fridge if only for 2–3 days) until disposal.

This method allows students to explore the organ and its functions rather than follow a strict dissection protocol. Using pins and labels helps the teacher assess whether the student can identify the different sections of heart. Students could use this practical for drawing skills instead of a photograph being taken.

Similar approaches can be used with respiratory system dissections. Rubbing tubing can be inserted into the trachea to inflate the lungs.

**Risk assessment**

Risk assessment and risk management are the responsibility of the centre.

**Trialling**

The practical should be trialled before use with students.