

NEATH PORT TALBOT COLLEGE COLEG CASTELL NEDD PORT TALBOT

School of Maths & Science Science Practical

Heart & Lung Dissection

◆ Aim

To note the close relationship between the heart and lungs, and to dissect a sheep's heart to relate structure to function.

◆ Introduction

All mammals have a double circulatory system within which the heart is a double pump closely associated with the lungs.

The following practical will allow you to note these features and relate them to the human circulatory system.

◆ Safety



Control Measures

- The wearing of **disposable gloves, goggles and lab coat** at all times will be sufficient to take account of most hazards and significant risks.
- Take care using the sharp dissection equipment and when it is placed on the bench beside you.
- Mop up any spillages of blood with the disinfectant provided.
- Dispose of the dissected heart in the appropriate bowl at the end of the practical.
- Wipe over benches with the disinfectant cloths at the end of the practical.
- Wash your hands before leaving the lab.

◆ **Investigation**

Tick each observation box and answer the questions in the spaces provided.

1. Distinguish between the **dorsal** and **ventral** sides of the heart.

How is the ventral side more rounded (convex) than the dorsal side?

2. Observe the blood vessels in the wall of the heart.

a) Name the arteries in the wall.

b) Explain how a blood clot could develop in this artery.

c) What are the consequences of developing a blood clot?

3. Identify the:

Right and left atria.

Right and left ventricles.

a) The walls of the ventricles feel firmer. Why?

b) Give the alternative name for cardiac muscle.

4. Observe that each lung is made of lobes.

a) What is the purpose of these?

b) The lungs feel springy. Why?

c) Explain the colour of the lungs.

d) Give the correct name for the windpipe.

e) Why are the bands of cartilage semi-circular?

5. Notice how the lungs inflate with air.

6. Complete the following to explain how the lungs inflate and deflate in the living body.

Inhalation:

The intercostal muscles (1) _____ and lift the ribcage

(2) _____.

As a result the volume inside the thorax (3) _____ and therefore the pressure (4) _____.

The pressure is now (5) _____ than (6) _____ and so air rushes in.

Exhalation:

The intercostal muscles (1) _____ and the ribcage moves

(2) _____.

The (3) _____ inside the thorax (4) _____ and the
(5) _____. (6) _____. The pressure is now
(7) _____ than (8) _____ and air is
(9) _____.

7. Observe how closely associated the lungs and the heart are.

- a) Which chamber of the heart receives oxygenated blood from the lungs?
- b) Name the blood vessel which carries this oxygenated blood to the heart.
- c) Which chamber of the heart pumps deoxygenated blood to the lungs?
- d) Name the blood vessel which carries this blood from the heart to the lungs.

8. Observe the flow of water through the heart when the rubber tube from the tap is connected to the vena cava.
From which blood vessel does the water emerge?

9. Now observe the pathway of the water as it is run in through the pulmonary vein.
From which blood vessel does the water now emerge?

10. Your lecturer will cut through the ventral wall of the heart.
Name the valves which are at the entrance to the:

- a) Aorta
- b) Pulmonary artery

Which valves separate the:

- a) RA from RV
- b) LA from LV

11. Observe the string like structures attached to one set of valves.

- a) Name these strings
- b) To which valves are they attached?
- c) What is their function?

12. Observe the muscle pillars.

- a) Give their correct name.
- b) What is their function?