

X_Biology_ Life Processes (Transportation)_Handout 1

MODULE 1/4

TRANSPORTATION IN HUMAN BEINGS

CIRCULATORY SYSTEM (Slide 1)

- Blood consists of a fluid medium composed of plasma and blood vessels.
- The plasma distributes oxygen/carbon dioxide, nutrients/waste products, salts, hormones and heat to and from the body.
- There is a pumping organ to push blood around the body, a network of tubes to reach blood to all the tissues and a system in place to ensure that this network can be repaired if damaged.

THE HUMAN HEART

(Slide 2, 3)

- The size of the heart is the of a clenched fist and it is located between the lungs in the thoracic cavity.
- It is made up of MYOCARDIUM i.e. cardiac muscles
- The cardiac muscles are seen to contract and relax rhythmically throughout life.
- The heart has a tilt and is located towards the left side of our thoracic cavity.
- The heart has 4 prominent chambers, the upper two chambers are called the **Atria or the Auricles** and the lower two chambers are called the **ventricles**
- Always the **right** and **left sides** on the **diagram appear** reversed. This is because all references to the **right** or **left side** of the **heart** use our outside point of reference (as if they are facing you for inspection).
- The oxygenated and deoxygenated blood are kept separate in the left and right side of the heart respectively. This ensures that the body gets a steady flow of oxygen that is needed to maintain the constant body temperature.
- The walls of the auricles are thinner than that of the ventricles as they send blood only to the ventricles and so a shorter distance.
- The walls of the ventricles are thicker as they send blood to the different parts of the body that are located further away.
- The wall of the left ventricle is the thickest.
- The 4 chambers are separated by the septum (dividing wall).

- The right auricle gets deoxygenated blood via the vena cavae.
- The left auricle receives oxygenated blood via the pulmonary veins.
- The valves in the heart prevent backflow of blood.
- The right ventricle sends out deoxygenated blood via the pulmonary arteries to the lungs.
- The left ventricle sends out oxygenated blood via the aorta to the body parts.

FLOW OF BLOOD THROUGH THE HEART

Slide 4

- The heart has separate chambers to prevent oxygenated and deoxygenated blood from mixing.
- The auricles collect the blood and the ventricles distribute the blood.
- The deoxygenated blood needs to go to the lungs for oxygenation.
- The deoxygenated blood pours into the right auricle as it relaxes.
- This right auricle contracts and pours the impure blood to the relaxed right ventricle below it.
- Then the right ventricle contracts and sends the deoxygenated blood to the lungs through the pulmonary arteries for oxygenation.
- The oxygenated blood from the lungs comes back to the heart. This has then to be pumped to the rest of the body.
- The oxygenated blood enters the left auricle via the pulmonary veins when it relaxes. Then the left auricle contracts and pumps the oxygenated blood to the left ventricle below it.
- The left ventricle now contracts and sends the oxygenated blood to the rest of the body through the aorta.
- The valves prevent the back flow of blood.
- The pulmonary arteries are the only arteries carrying deoxygenated blood.
- The pulmonary veins are the only veins that carry oxygenated blood.