

cavity. 3) Blood will surround the organs; it will eventually return to the heart via valves called 'ostia'. 4) Insects can survive with a less efficient system as they have oxygen delivered directly to the tissues via tracheae.

Advantages of double circulation:

1) Double circulation maintains a higher blood pressure and average speed of flow. The increases speed and pressure maintained a steeper concentration gradient for gas exchange of nutrients and waste. 2) In a single circulatory system, blood has to go through two capillary networks. In a double system, it only has to go through one. 3) When blood enters a capillary network, the pressure and speed drops significantly.

Open or closed system:

1) Circulatory systems are either closed or open. 2) Closed: blood is always contained within a network of vessels. 3) Open: blood is not contained within vessels; it is pumped, directing it into body cavities. 4) Humans have closed, double circulatory systems.

Blood vessels (arteries):

1) Wall consist of three layers: tunica externa, tunica media, and tunica intima. Have a narrow lumen. 2) Tunica intima: made up of an endothelial layer, a layer of connective tissue, and a layer of elastic fibres (Endothelium is very smooth and has reduced friction). 3) Tunica media: made up of smooth muscles and a thick layer of elastic tissue. (It helps maintain blood pressure by stretching and recoiling to even out fluctuations.). Arteries will have thick media. (Allows withstanding high pressure, contractile properties to narrow the lumen). 4) Tunica externa: Exterior of the artery. It consists mostly of collagen and prevents damage by overstretching.

What does the pulmonary artery do?

Carries deoxygenated blood to the lungs