

thebiotutor

AS Biology OCR

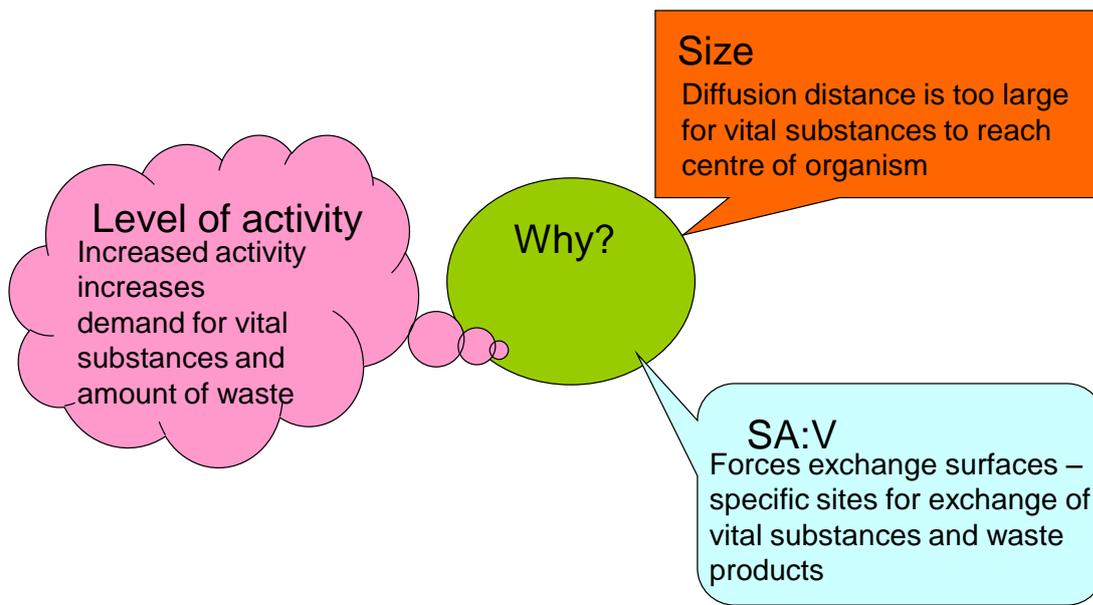
Unit F211: Cells, Exchange & Transport

Module 2.2 Transport in Animals

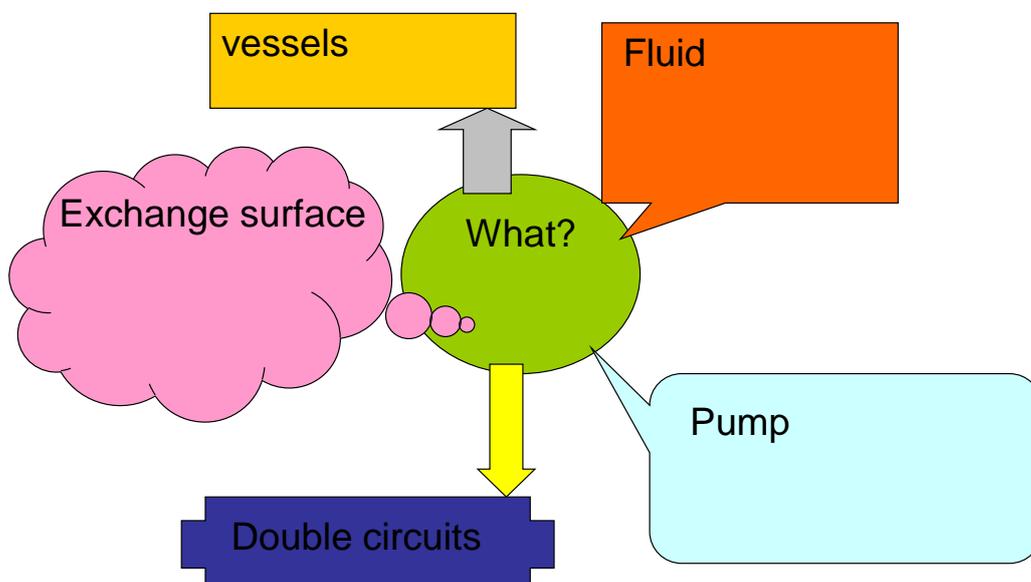
Notes & Questions

Explain the need for transport systems in multicellular animals in terms of size, level of activity and surface area to volume ratio.

Why do animals need a transport system?

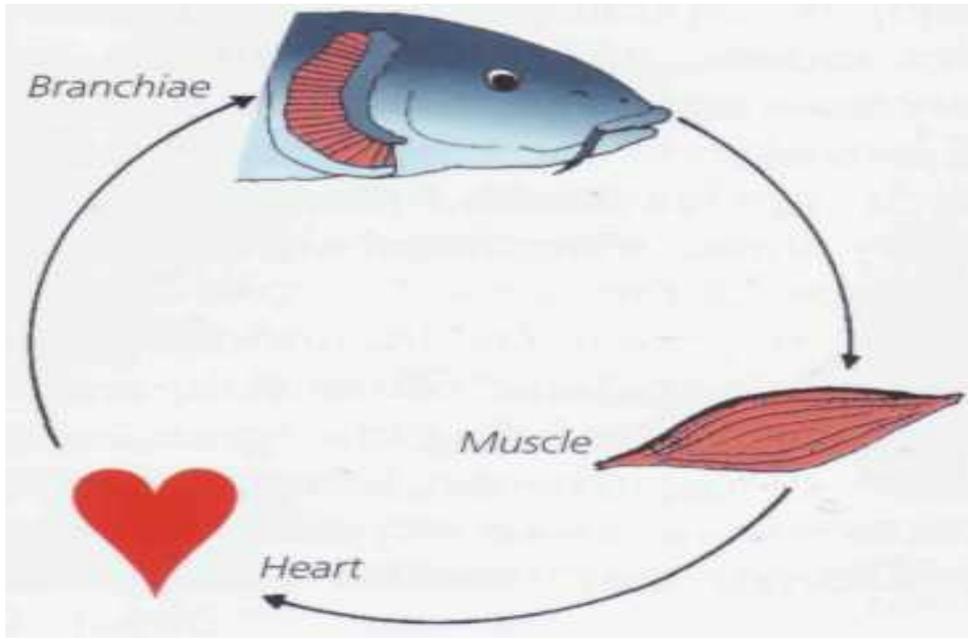


Features of a good transport system?



Explain the meaning of the terms *single circulatory system* and *double circulatory system*, with reference to the circulatory systems of fish and mammals.

Heart → Gills → Body



Single Circulatory system

Blood passes through the heart once for each complete circuit of the body

Double Circulatory system

Blood passes through the heart twice for each complete circuit of the body

Pulmonary circuit

Systemic circuit

Single Vs Double

• Single - Fish

- Low blood pressure after oxygenation of the blood
 - slow speeds of blood flow to all organs
 - Slow acquisition of oxygen and nutrients
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- Fish however are not very active and they do not heat their blood so respire less so have lower oxygen and nutrient demands
 - <http://www.youtube.com/watch?v=SQu4qAemt6E&feature=related>

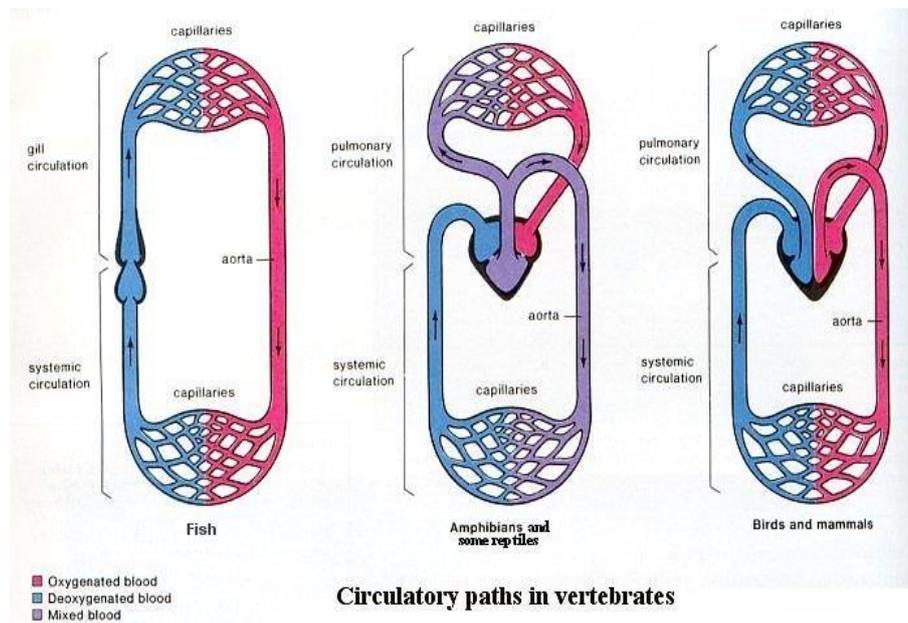
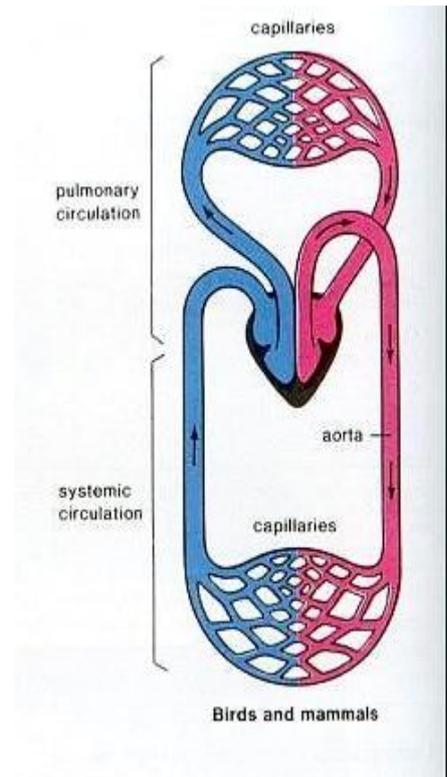
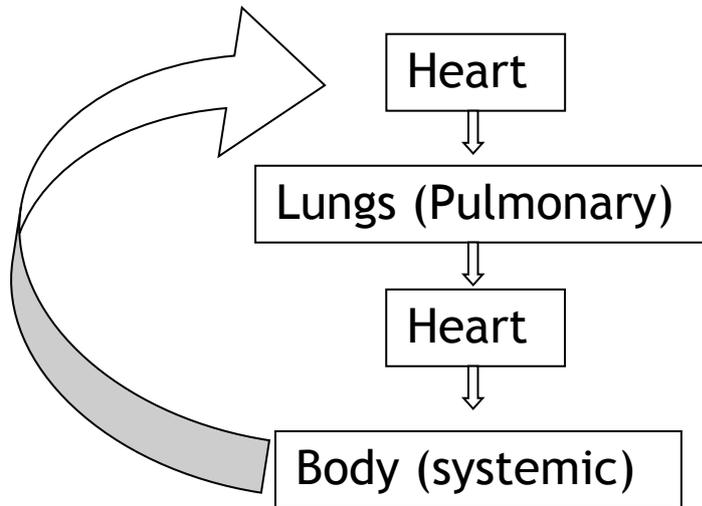


Single Vs Double

• Double - mammals

- High blood pressure after oxygenation of the blood as blood passes through the heart for a second time in one circulation
 - High speeds of blood flow to all organs
 - Fast acquisition of oxygen and nutrients
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- Mammals can therefore be very active and they also heat their blood and so they respire a lot so have large oxygen and nutrient demands
 - <http://www.youtube.com/watch?v=MukoHxGwnPA>
 - <http://www.youtube.com/watch?v=A1WBs74W4ik&feature=related>





Explain the meaning of the terms *open circulatory system* and *closed circulatory system*, with reference to the circulatory systems of insects and fish.

Describe, with the aid of diagrams and photographs, the external and internal structure of the mammalian heart.

Explain, with the aid of diagrams, the differences in the thickness of the walls of the different chambers of the heart in terms of their functions.

Describe the cardiac cycle, with reference to the action of the valves in the heart.

Describe how heart action is coordinated with reference to the sinoatrial node (SAN), the atrioventricular node (AVN) and the Purkyne tissue.

Interpret and explain electrocardiogram (ECG) traces, with reference to normal and abnormal heart activity.

Describe, with the aid of diagrams and photographs, the structures and functions of arteries, veins and capillaries.

Explain the differences between blood, tissue fluid and lymph.

Describe how tissue fluid is formed from plasma.

Describe the role of haemoglobin in carrying oxygen and carbon dioxide.

Describe and explain the significance of the dissociation curves of adult oxyhaemoglobin at different carbon dioxide levels (the Bohr effect).

Explain the significance of the different affinities of fetal haemoglobin and adult haemoglobin for oxygen.