

Transport in animals

Circulatory systems

Heart, vessels, valves

one-way flow

Fish: single circulation **Supplement**

heart, gills, body once through heart

Mammal: double circulation **Supplement**

pulmonary circuit systemic circuit

Advantages of double **Supplement**

high pressure to body lower pressure in lungs

The heart

Structures

atria, ventricles septum coronary arteries

Valves **Supplement**

atrioventricular semilunar

Wall thickness **Supplement**

left ventricle thickest atria thin

Pumping action **Supplement**

atria contract first ventricles contract valves prevent backflow

Monitoring

ECG pulse rate valve sounds

Exercise

heart rate rises returns to resting rate

Coronary heart disease

blocked coronary arteries risk factors diet and exercise

Blood vessels

Artery

thick wall narrow lumen high pressure

Vein

thin wall wide lumen valves

Capillary

one cell thick exchange large network

Heart vessels

vena cava, aorta pulmonary artery, vein

Kidney vessels

renal artery renal vein

Liver vessels **Supplement**

hepatic artery hepatic portal vein hepatic veins

Blood

Components

red cells white cells platelets plasma

Red cells

haemoglobin carry oxygen

White cells

phagocytosis antibodies

Plasma transports

ions, nutrients, urea hormones, carbon dioxide

Clotting roles

stops blood loss stops pathogens entering

Clotting process **Supplement**

fibrinogen to fibrin mesh traps cells