

Unit 2 Key Area 6

Transport Systems – Animals

In mammals the blood contains:

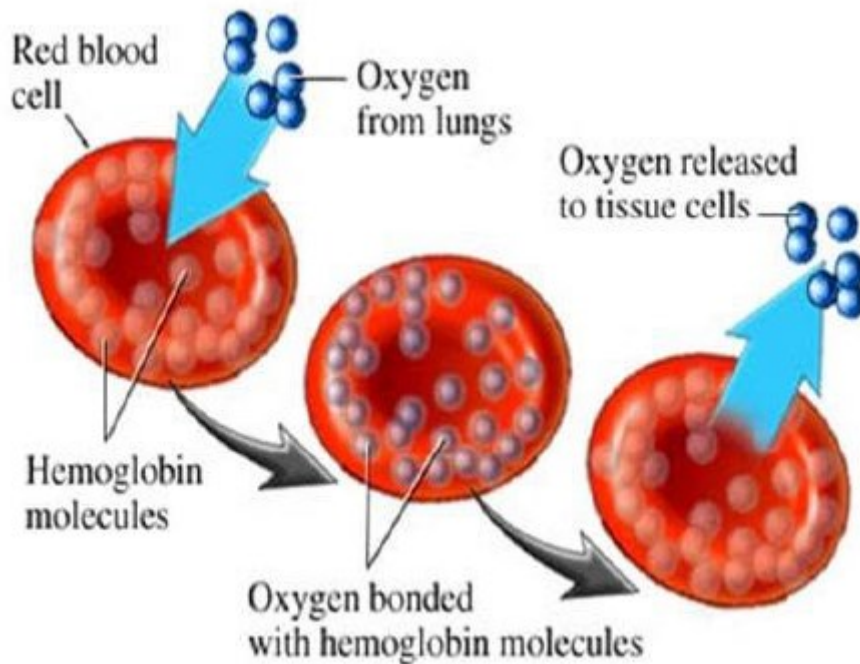
PLASMA

RED BLOOD CELLS

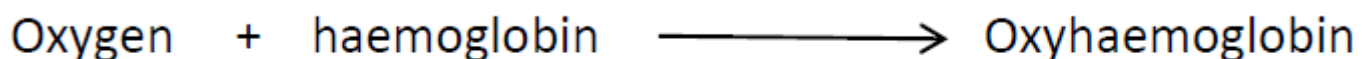
WHITE BLOOD CELLS.

Blood transports nutrients, oxygen & carbon dioxide.

Red blood cells are specialised by being **Biconcave in shape**, having **no nucleus** and containing **haemoglobin**.



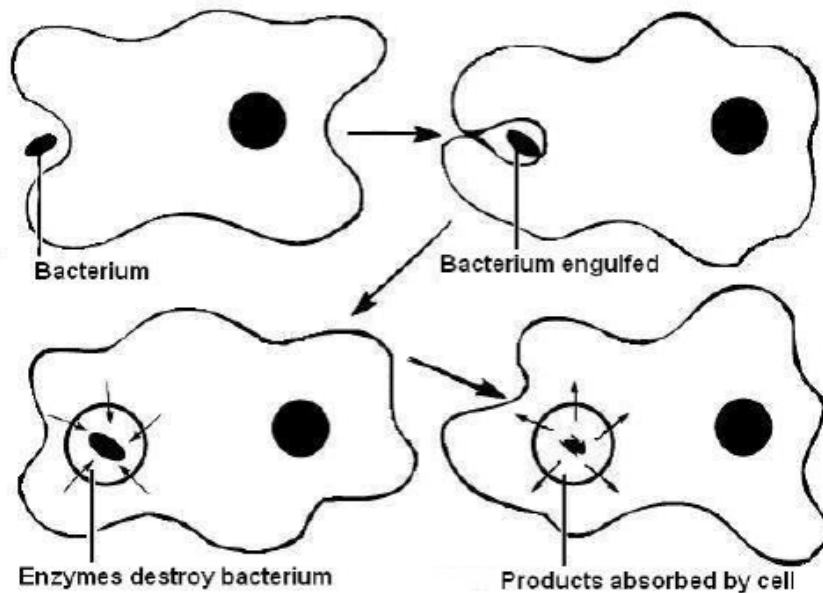
This allows them to transport oxygen efficiently in the form of **oxyhaemoglobin**.



White blood cells are part of the **immune system** and are involved in **destroying pathogens**. Pathogens are disease-causing microorganisms such as bacteria, viruses and fungi.

There are 2 main types of cells involved:-

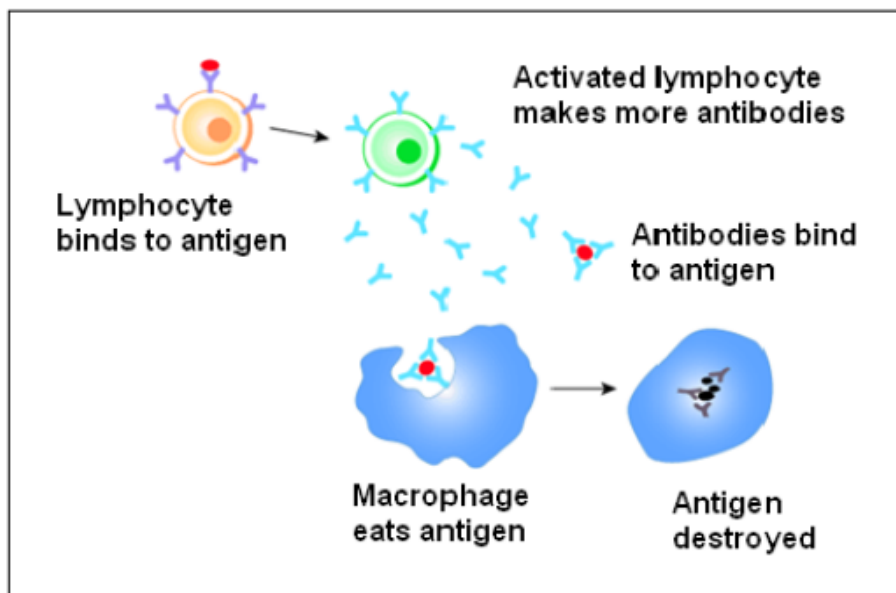
Phagocytes carry out phagocytosis by **engulfing pathogens**.



Some **Lymphocytes** produce **antibodies** which destroy pathogens.

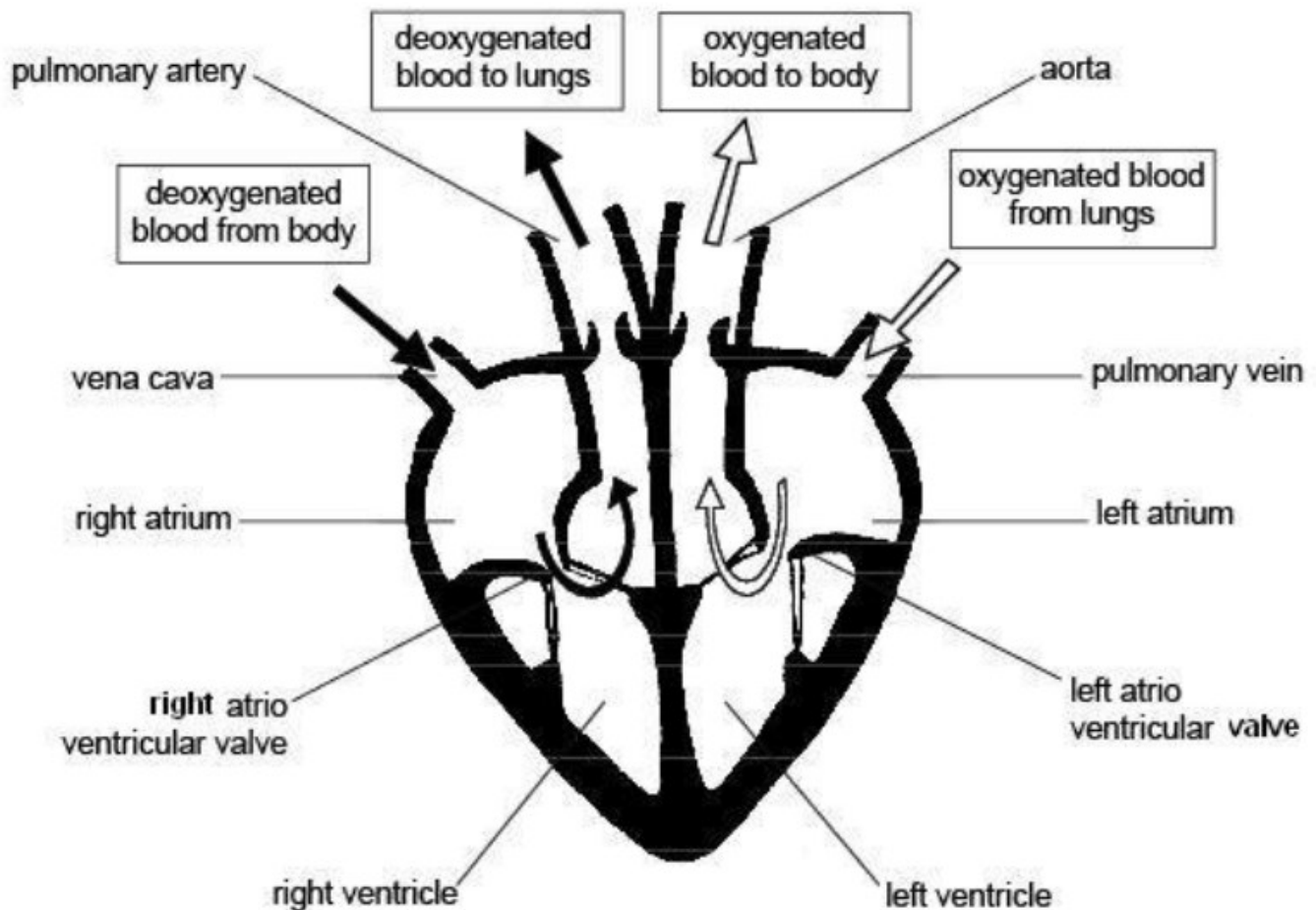
Each **antibody is specific** to a particular pathogen.

Antibody production



Pathway of oxygenated and deoxygenated blood.

The Heart



There are **4 chambers** in the heart :

Right & Left **Atria** (at the top)

Right & Left **Ventricles** (at the bottom)

There are **4 valves** in the heart:

1 between the right atrium & right ventricle

1 between the left atrium & left ventricle

1 between the right ventricle & pulmonary artery

1 between the left ventricle & aorta

Valves **prevent the backflow of blood** and ensure that blood only travels in one direction.

The **right atrium receives deoxygenated** blood from the body via the **vena cava**. Blood is then passed to the right ventricle.

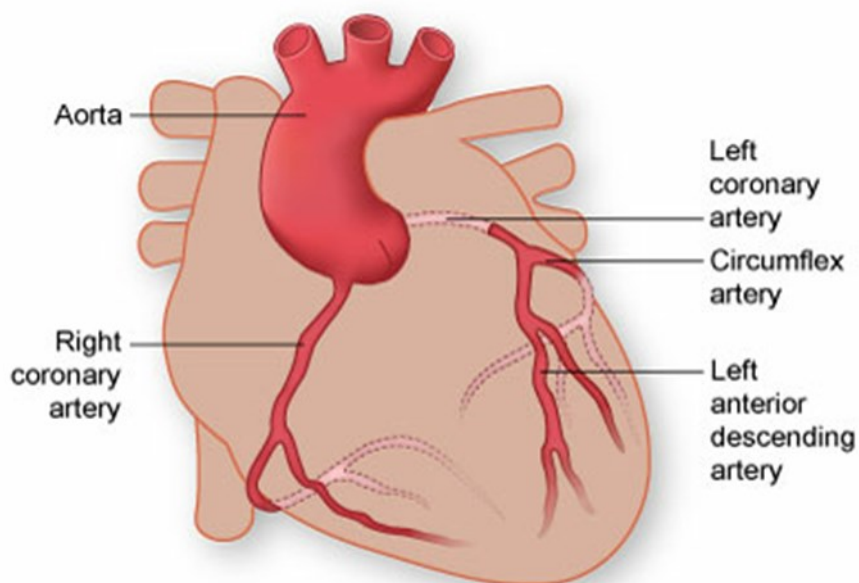
The **right ventricle pumps deoxygenated blood** to the **lungs** via the **pulmonary artery**.

Oxygenated blood returns to the **left atrium** from the **lungs** via the **pulmonary vein**. Blood is then passed to the left ventricle.

The **left ventricle pumps oxygenated blood** around the body via the **aorta**.

The **left ventricle wall is thicker** than the right ventricle wall since it has to **pump blood further**.

The **coronary artery supplies the heart muscle** itself with oxygenated blood. The coronary artery is an early branch from the aorta.

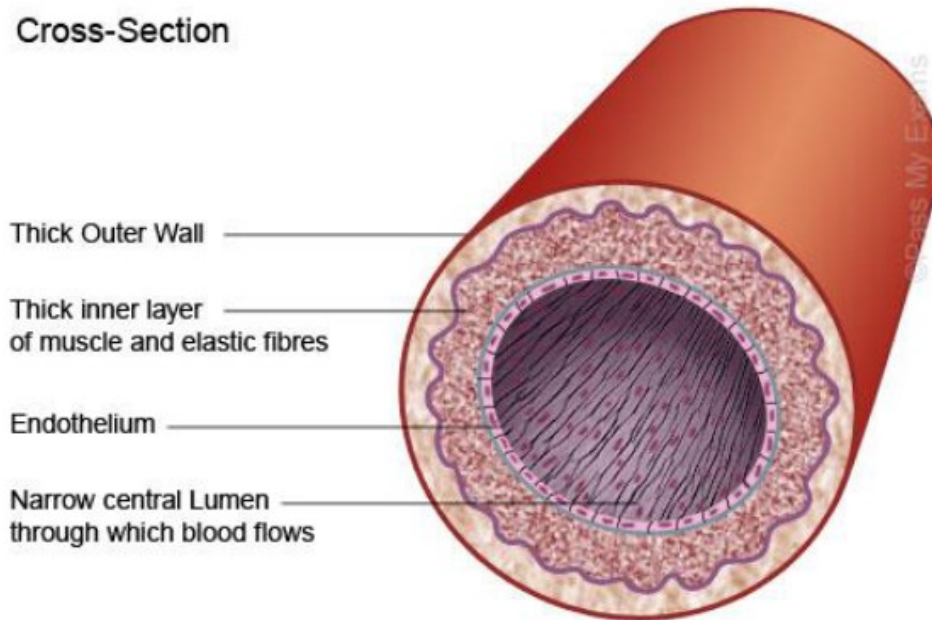


Blood Vessels

Arteries

Arteries have **thick muscular walls**, a **narrow central channel** and carry blood under **high pressure** **away from the heart**.

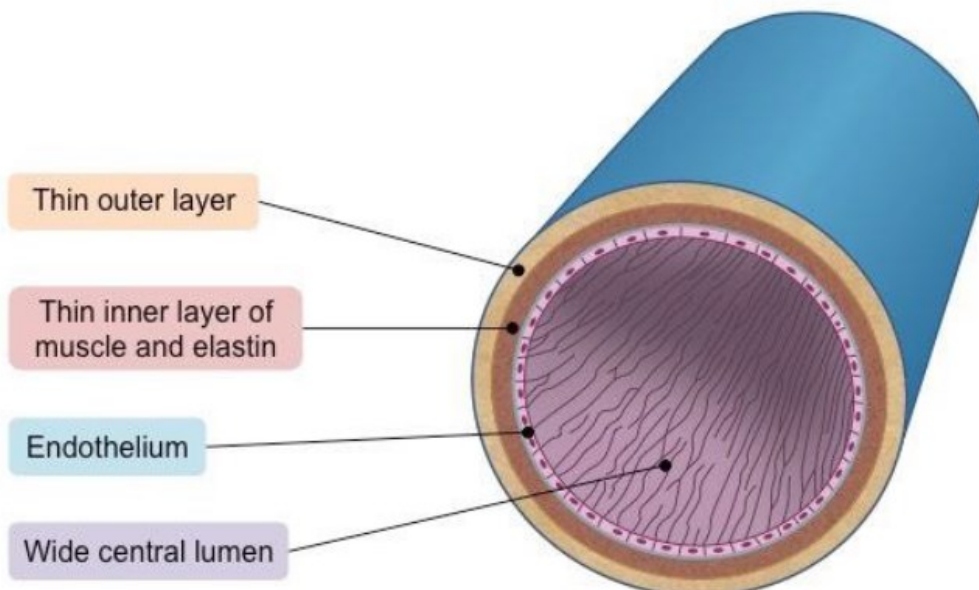
Cross-Section



Veins

Veins have **thinner walls**, a **wider channel** and carry blood under **low pressure** back **to-wards the heart**.

Veins contain **valves** to **prevent the backflow of blood**.



Capillaries

Capillaries are **thin walled** and have a **large surface area**, forming **networks at tissues and organs** to **allow efficient exchange of materials**.

