Human Anatomy & physiology

BLOOD

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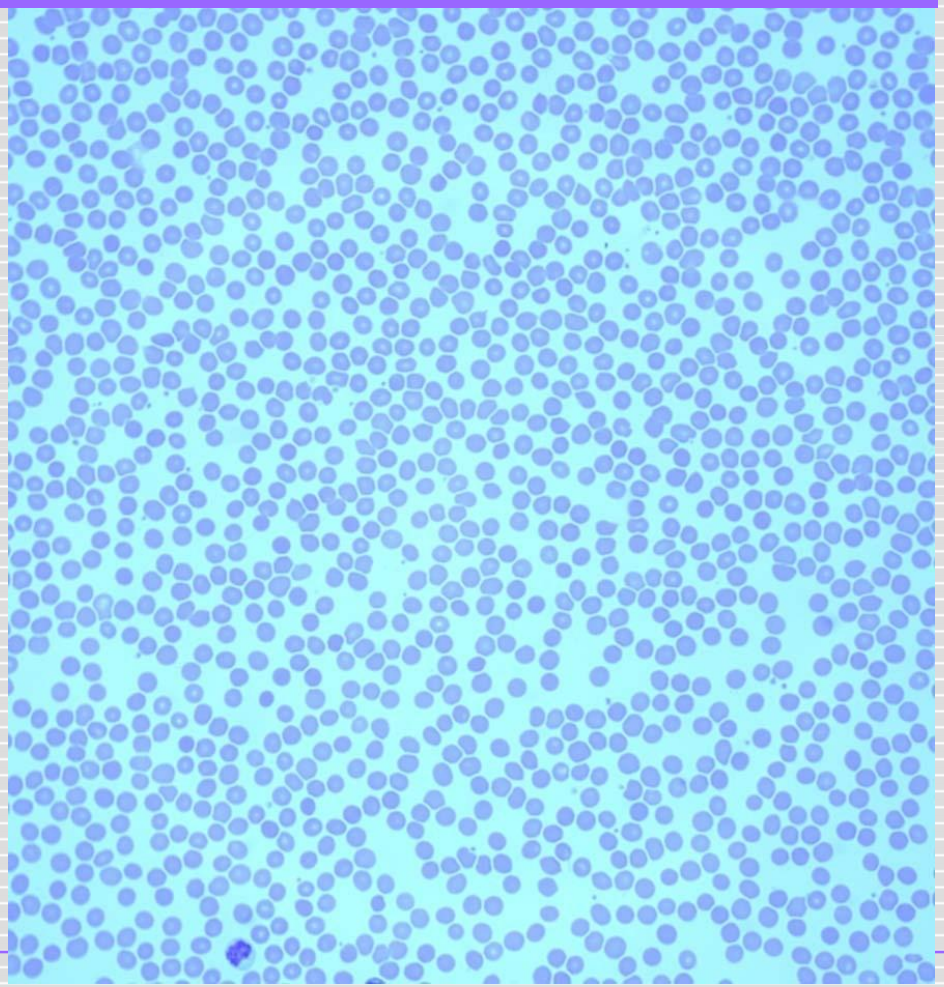
KTPC

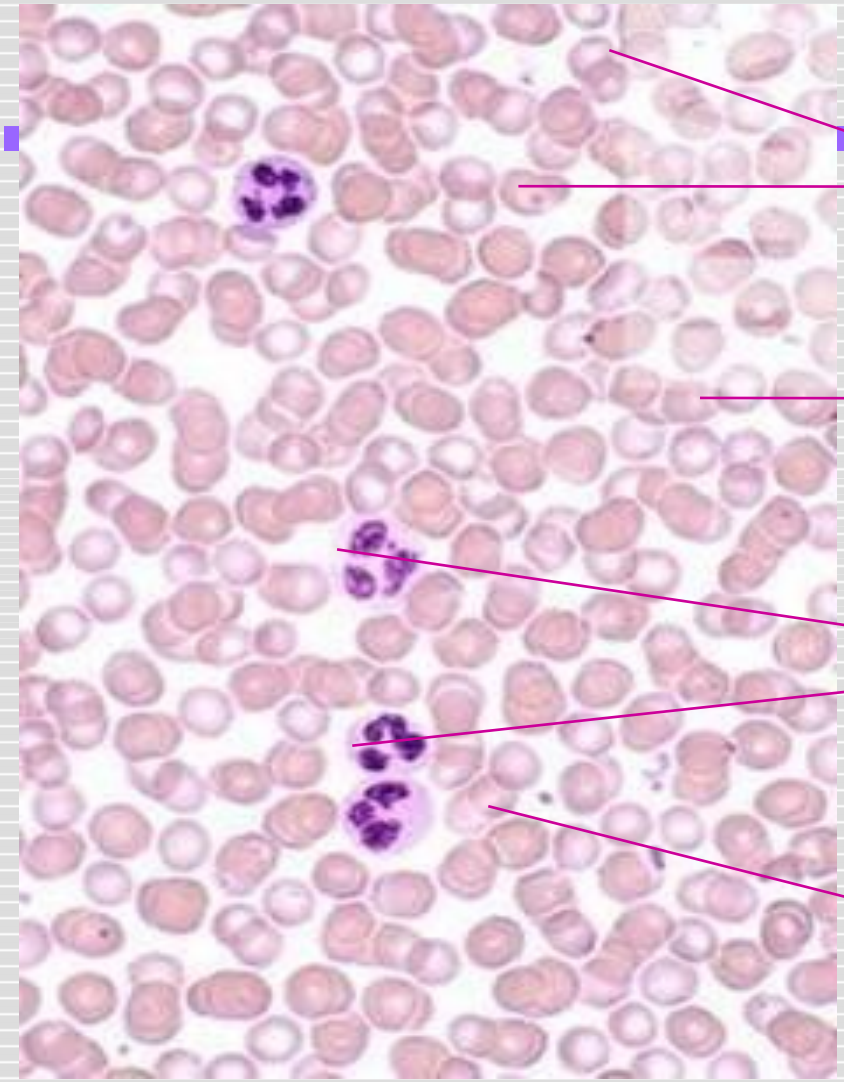
Blood

- the average human has 5 litres of blood
- it is a transporting fluid
- it carries vital substances to all parts of the body

Human blood smear



X 500



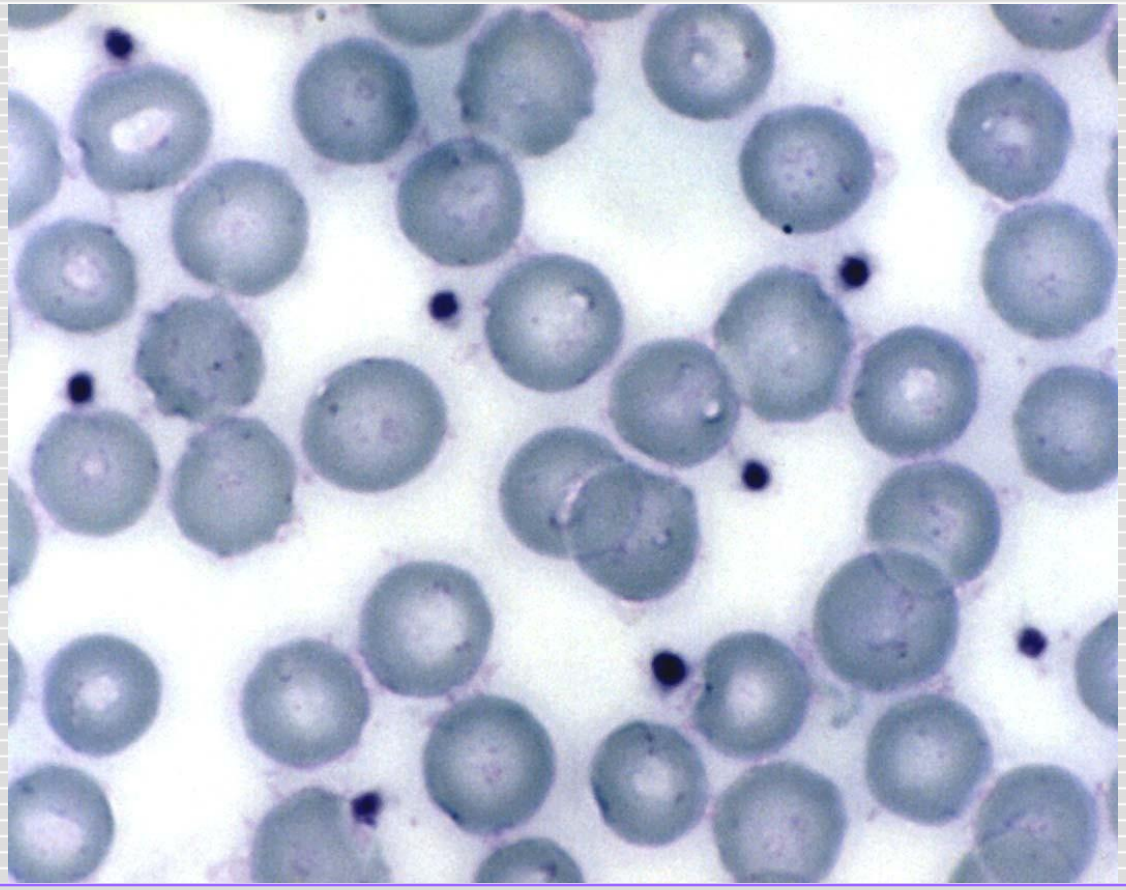
plasma (55%)

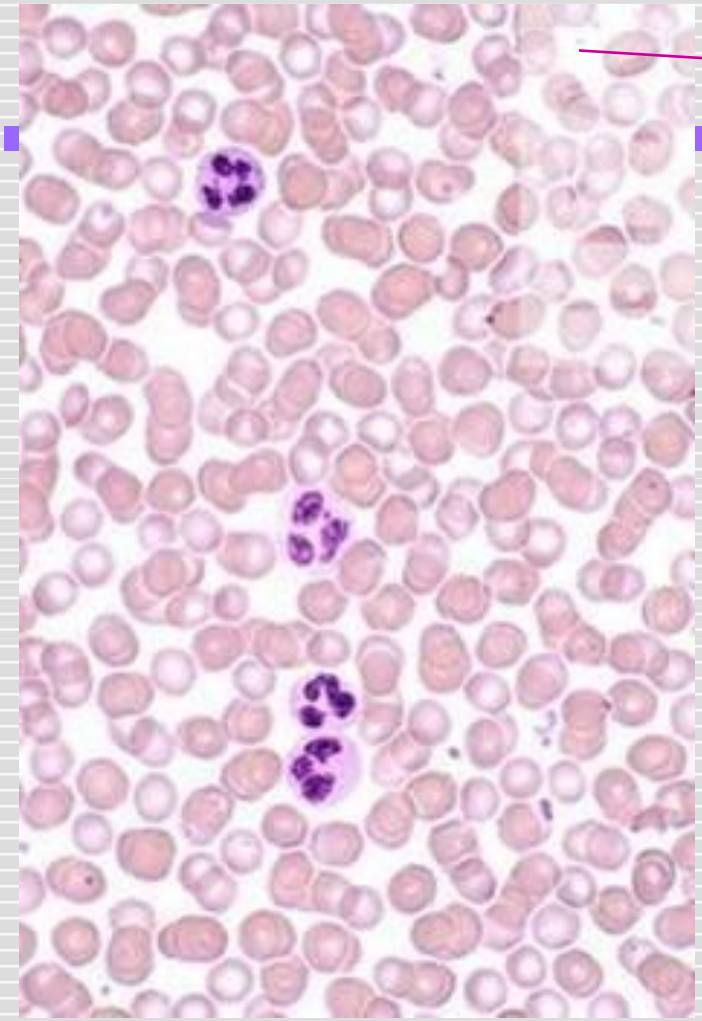
red blood cells
(5-6-million /ml)

white blood cells
(5000/ml)

platelets

x 1000



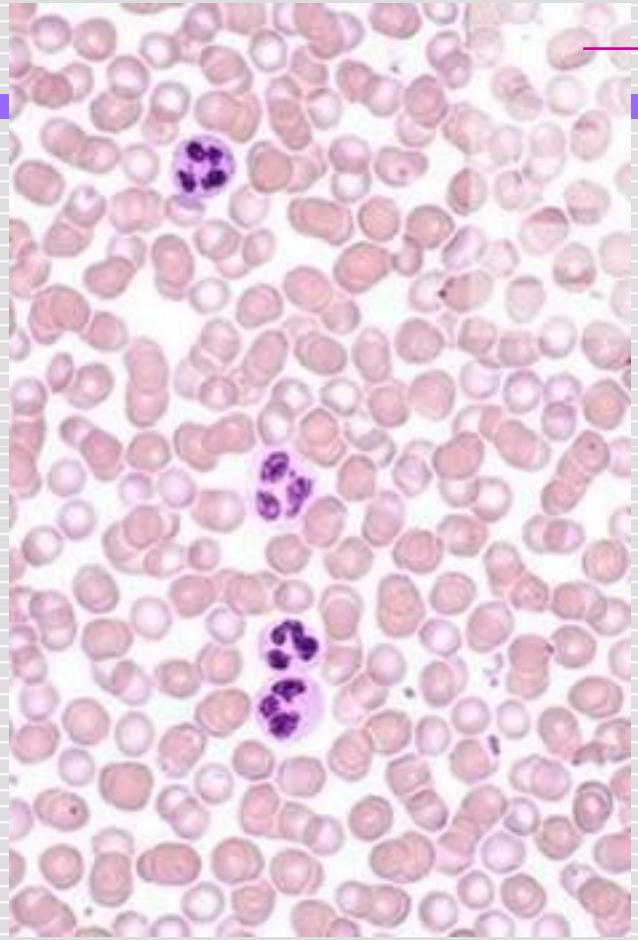


Plasma

liquid part of blood

plasma transports:-

- soluble food molecules
- waste products
- hormones
- antibodies

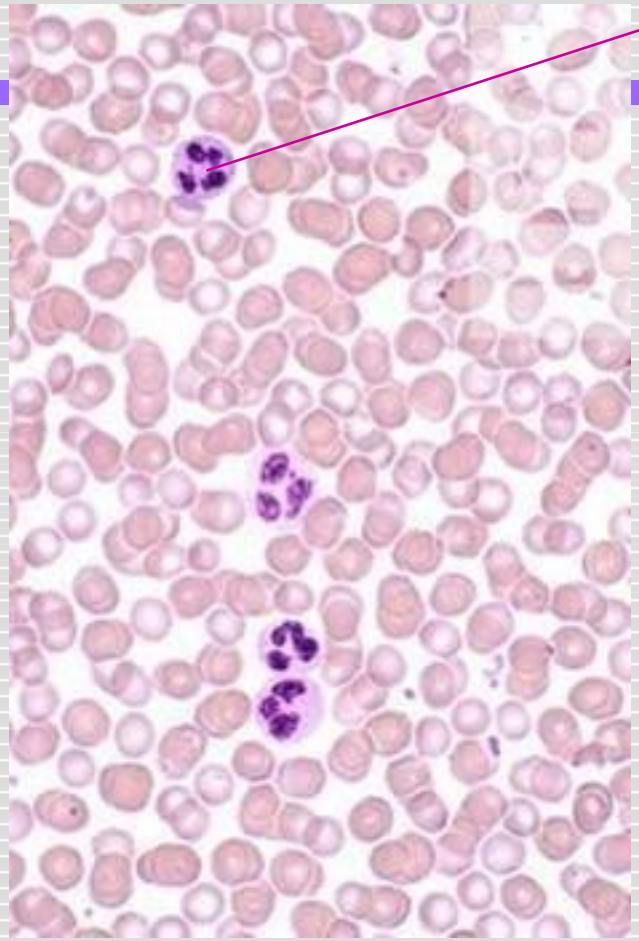


Red blood cells (RBCs)

- transport **oxygen**
- specialised to do this

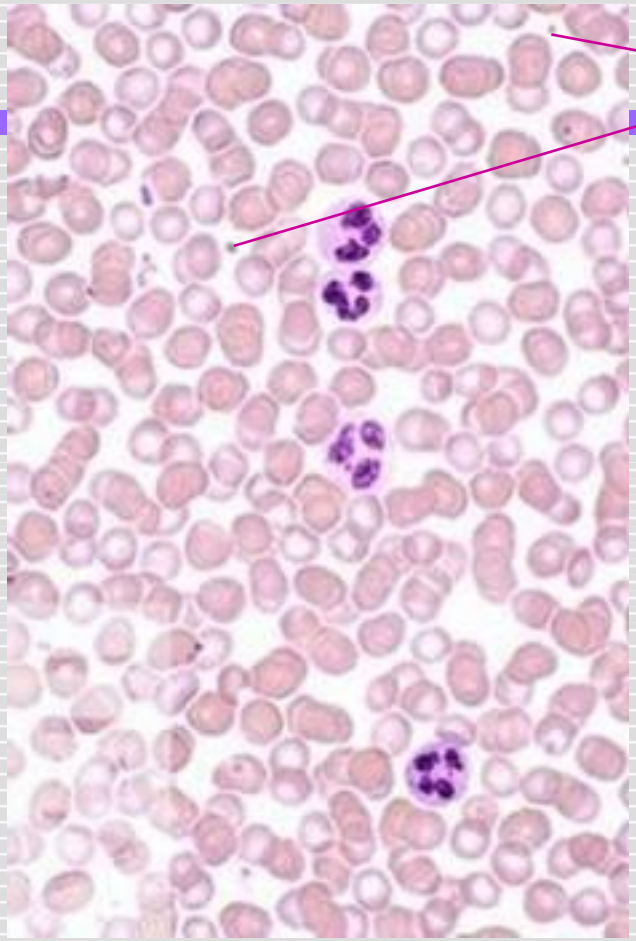
Also carry some CO_2

White blood cells



- the bodies "**defence**"
- part of the immune system
- much **larger** than RBCs
- far **fewer**
- have a nucleus
- 4000-13000 per mm^3
- 2 types

phagocytes and lymphocytes



Platelets

if you get cut:-

- platelets produce tiny fibrin threads
- these form a web-like mesh that traps blood cells.
- these harden forming a clot, or "scab."
- 150,000 to 400,000 per mm^3

Red blood cells specialisations

1) biconcave shape

increases the surface area so more oxygen can be carried

2) no nucleus

→ extra space inside

3) contain haemoglobin

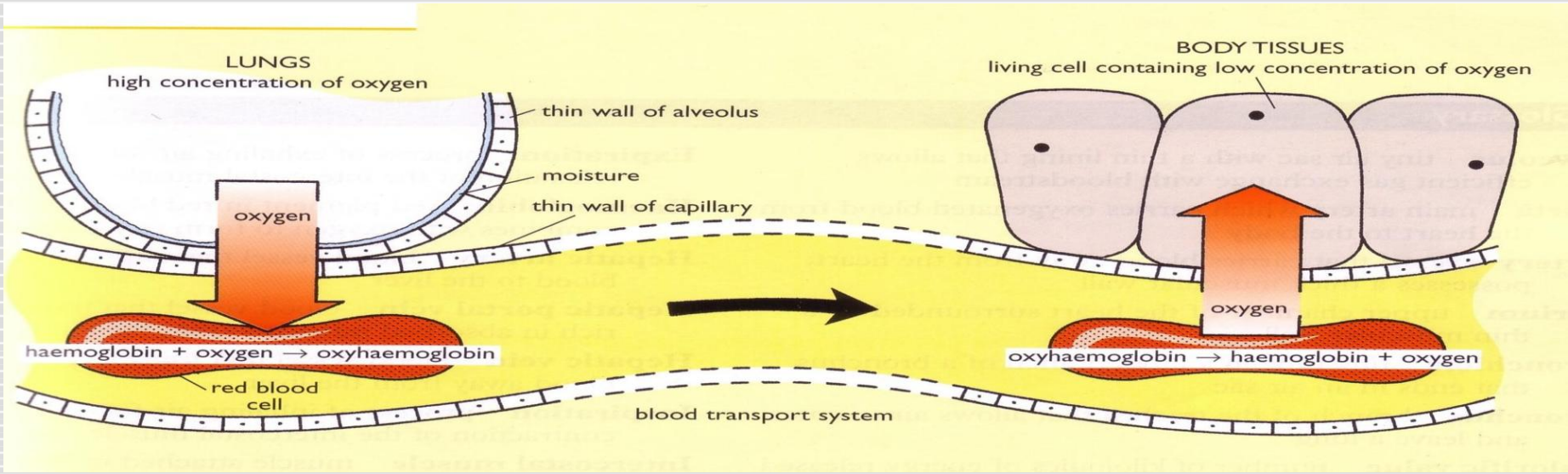
→ the oxygen carrying molecule

→ 250million molecules / cell

Haemoglobin

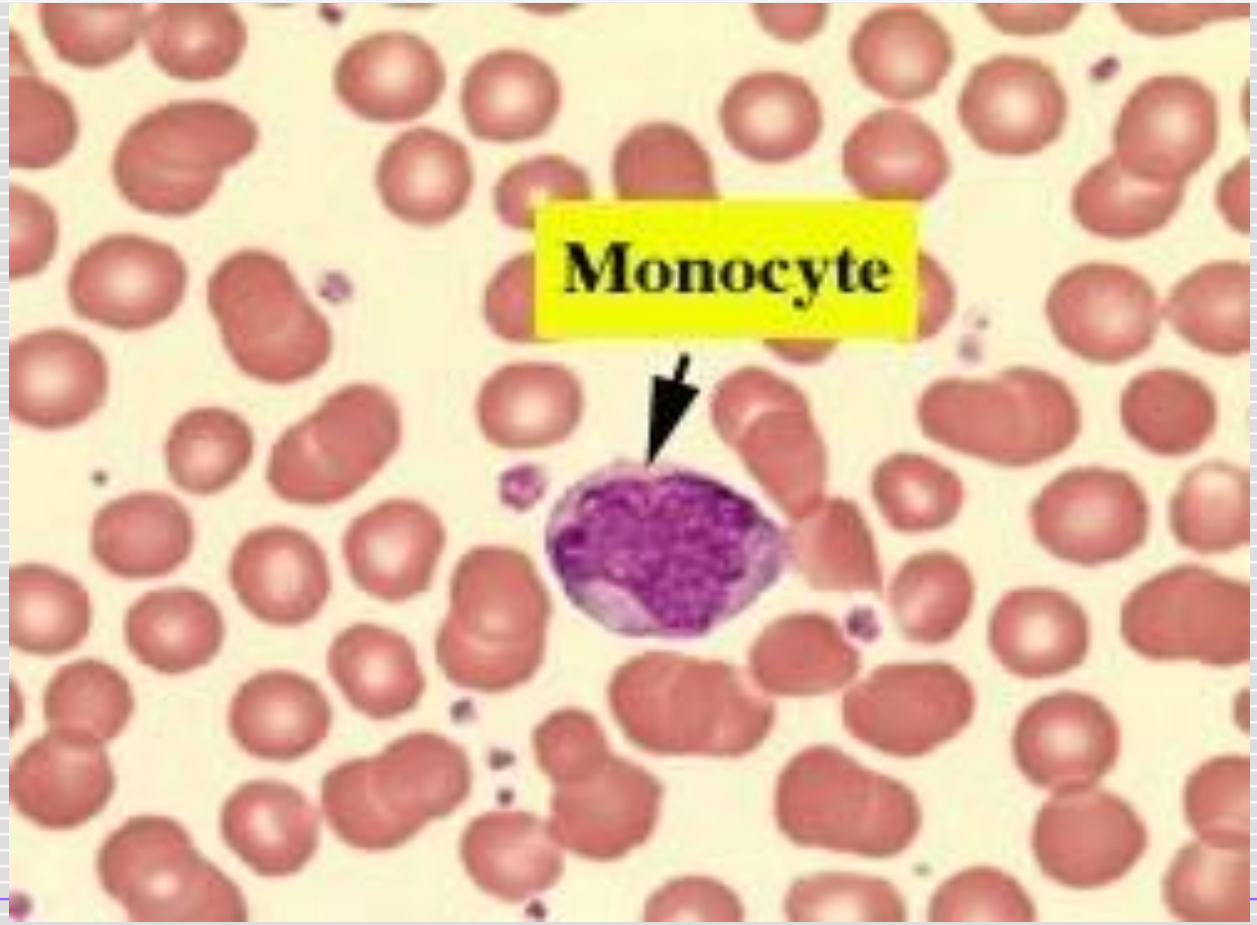
- gives red blood cells their colour
- can carry up to 4 molecules of O_2
- associates and dissociates with O_2
- contains iron

Function of Haemoglobin



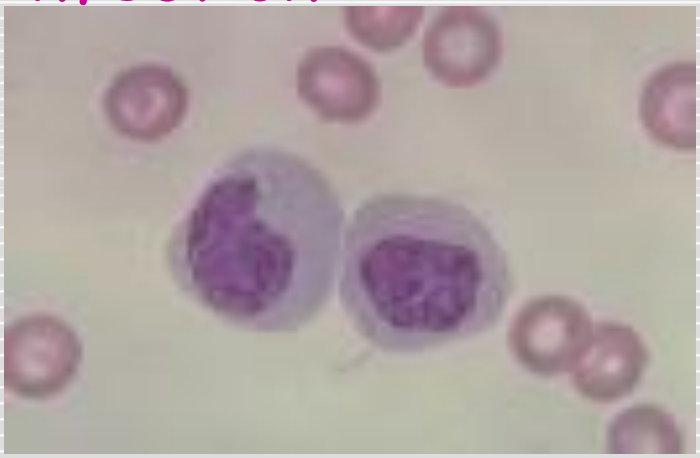
When there is a high concentration of oxygen e.g in the alveoli haemoglobin combines with oxygen to form oxyhaemoglobin. When the blood reaches the tissue which have a low concentration of oxygen the haemoglobin dissociates with the oxygen and the oxygen is released into body tissues

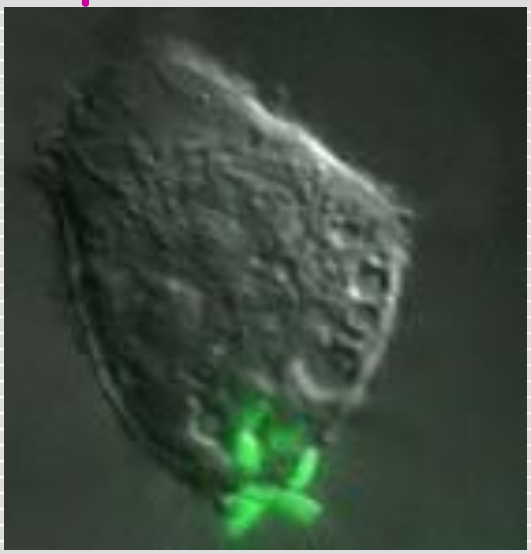
Monocytes



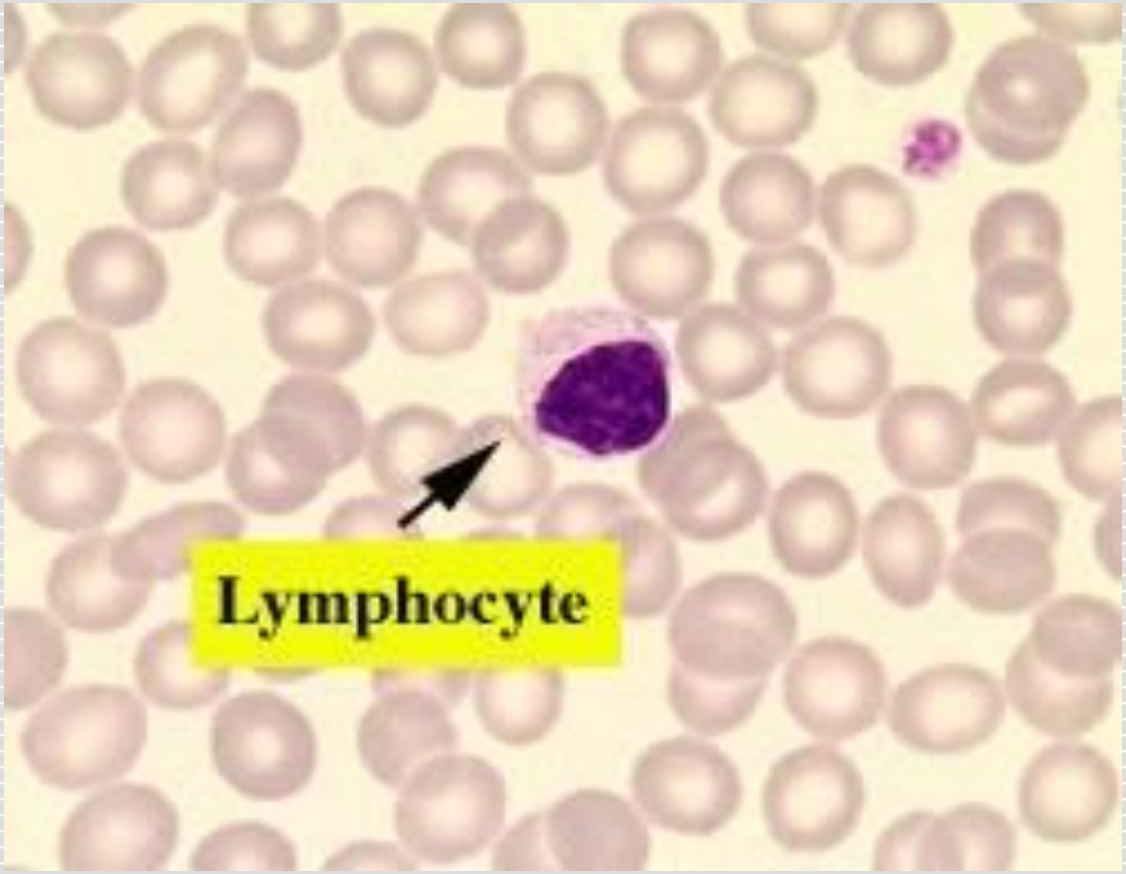
Phagocytes

- Monocytes and macrophages
- Provide a **non-specific** response to infection





Lymphocyte



Lymphocytes

Provide a **specific immune response** to infectious diseases.

There are 2 types: -

- T-cells
- B-cells

They produce **antibodies**.