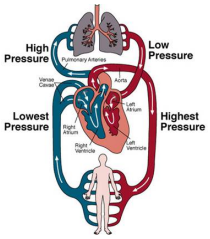
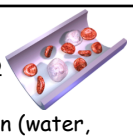
6.2 - CIRCULATORY SYSTEM

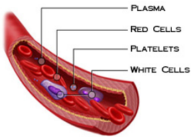
- transport nutrients, hormones, antibodies
- transport oxygen to cells
- transport waste away from cells (incl. CO_2 & urea)
- maintain body temperature (transport heat)
- control blood pressure
- blood clotting

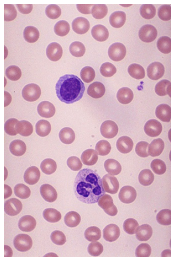


COMPONENTS OF BLOOD



- 55% plasma: liquid portion (water, proteins, solutes)
- 45% cells



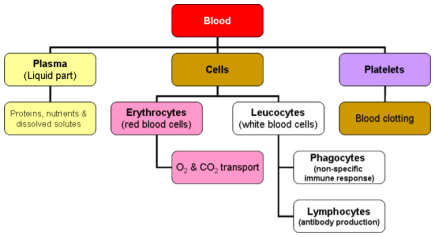


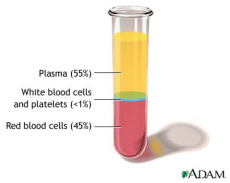
Sickle cell anemia

http://www.netwellness.org/ency/graphics/images/en/1223.jpg

American Society for Clinical Pathology <http://www.ascp.org/default.aspx>

Blood Composition





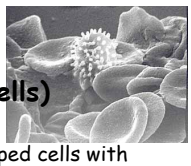
1) Plasma

- straw coloured fluid
- 90 % water
- carries waste, gasses, proteins, hormones
- 50-55 % of blood

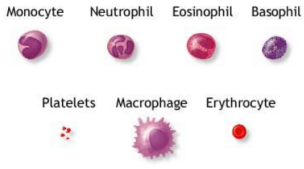
2) Erythrocytes (red blood cells)

- 40 % of blood
- round cells with hollow depression in centre to increase surface area
- has no nucleus or mitochondria
- contains hemoglobin (protein that carries oxygen)
- carries O2 and CO2
- produced in bone marrow; stored in spleen
- Lifespan = 120 days

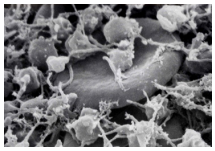
3) Leukocytes (White Blood Cells)



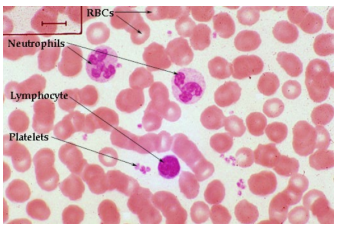
- Large irregular shaped cells with a nucleus
- Phagocytes are involved in immune response
- Lymphocytes produce antibodies



4) PLATELETS (Thrombocytes)



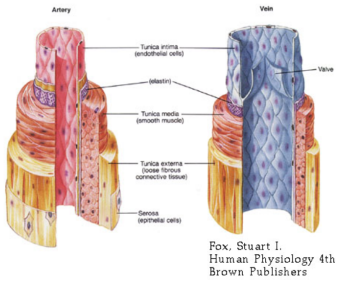
- Small cell fragments
- no nucleus
- Blood clotting agents



Blood Vessels

ARTERIES	CAPILLARIES	VEINS
Move blood away from the heart	Exchange of materials between blood and tissues	Move blood towards the heart
Has thick muscular walls	Thin walls 1 cell layer thick	Has thin walls
Narrow lumen	1 cell at a time	Wide lumen
No valves	No valves	Valves to prevent backflow
Move blood at high speed	Move blood at low speed. Cells move single file	Move blood at moderate speed
High pressure (blood spurts)	Low pressure	Low pressure (blood flows)
Generally O2 rich (bright red blood)	Links arterioles and venules	Generally O2 low (dark red blood)

Blood Vessels



Fox, Stuart I.
Human Physiology 4th
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