

Blood

Cardiovascular System - Part III

Blood

- A specialized fluid connective tissue with cells that are suspended in a fluid matrix
- Contains plasma & formed elements
 - Whole Blood

Whole Blood

- Plasma & formed elements
- $\sim 38^{\circ}\text{C}$ (100.4°F)
- Five times more viscous than water
- more sticky, more cohesive, more resistant to flow
- pH ~ 7.4

Functions of Blood

- Transports dissolved gases, nutrients, hormones, & wastes
- Regulates pH and ion composition
- Restricts fluid loss at site of injury
- Defends against toxins & pathogens
- Stabilizes body temperature

Plasma

- Matrix of blood (46-63 %)
- Proteins in solution
 - Denser than water
 - Albumins - osmotic pressure
 - Globulins - transport
 - Fibrinogen - essential component of clotting
 - Regulatory Proteins - enzymes, hormones
 - Electrolytes
 - Nutrients & Wastes

Formed Elements

- Blood cells & cell fragments in blood (37-54%)
 - Red Blood Cells
 - Erythrocytes
 - transport oxygen
 - White Blood Cells
 - Leukocytes
 - defense
 - Platelets
 - cell fragments & enzymes
 - important for clotting

Hemopoiesis

- The production of formed elements
- Myeloid stem cells & lymphoid stem cells are responsible for production