

Blood Components

Fall 2004

FUNCTIONS OF BLOOD

- Transportation
- Disburse nutrients
- Regulation
- Homeostasis



THE BLOOD

- Composition
- Average human volume +/- 5 quarts
- Whole blood:
 - 60% plasma
 - 40% cells - RBC'S, WBC'S,
 - Thrombocytes



Red Blood Cell

ERYTHROCYTES

- Mature through several stages
- Each stage with unique morphology
- Lose nuclei prior to maturity
- Biconcaved disks



Red Blood Cell

ERYTHROCYTES

- RBC's:
- Number: 4.5 - 5.5 million/mm³
- Size: 6 - 7 μ m
- Function: transport O₂ & CO₂
- Formation: bone marrow
- Destruction: life span +/- 120 days
- Fragmentation & removal in spleen, liver, & bone marrow

ABO BLOOD GROUP SYSTEM

<u>Blood Type</u>	<u>Antigens</u>	<u>Antibodies</u>
• A	A	Anti-B
• B	B	Anti-A
• AB	AB	Neither A,B
• O	None	Anti-A & B

RH FACTOR

- Rh positive RBC's have antigen for Rh factor
- Rh negative RBC's DO NOT have antigen for Rh factor



What does cross-match testing mean?



- Exposing donor blood to recipient blood

What cellular changes occur with a blood cross-reaction?

- Agglutination
- Hemolysis



LEUKOCYTES

- Two major groups:

- **GRANULOCYTES:**

- Neutrophils
- Eosinophils
- Basophils

- **AGRANULOCYTES:**

- Lymphocytes
- Monocytes



LEUKOCYTES

- **WBC's:**
- **Number:** 5,000 - 9,000 / mm³
- **Size:** 9 - 16 μ m
- **Function:** defense
- **Formation:** granulocytes in bone marrow
- **Destruction:** life span 1 day to years; spleen, liver, bone marrow

What information does a WBC with differential provide?

- **WBC count & categorization of:**
 - cell type
 - percentage of each type
 - morphology
 - maturity



What does the term morphology mean?



- Study of characteristics - size, shape, color, maturity

What does the term phagocytosis mean?



- Condition of / eating, destroying / cell

THROMBOCYTES

- Platelets
- Clotting
- Hemostasis



THROMBOCYTES

- **PLATELETS**
- **Number:** 250,000 - 450,000 mm³
- **Size:** 1 - 4 μ m
- **Function:** clotting
- **Formation:** bone marrow
- **Destruction:** life span 9 - 12 days, removed in spleen

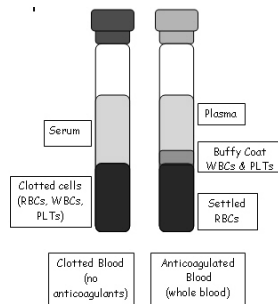
What does the term hematopoietic mean?



- **pertaining to / blood / formation**

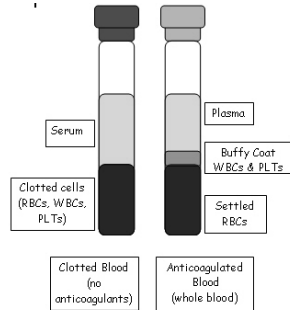
What is plasma?

- **Liquid portion of blood without cells**
- **90% water**
- **10% solutes**



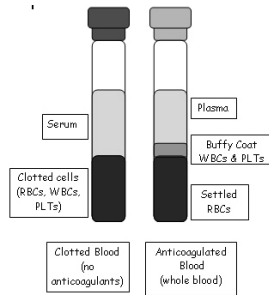
What is serum?

- The watery portion of blood after coagulation.



What is the buffy coat?

- A thin, white layer above RBC's formed by WBC's & platelets.



HEMOSTASIS & COAGULATION

- Hemostasis
- Vascular phase, vasoconstriction
- Platelet phase
- Coagulation phase
- Fibrinolysis
