

Figure 3-5. Molecules diffuse between the capillaries, intercellular fluid, and body cells.

Lymph vessels

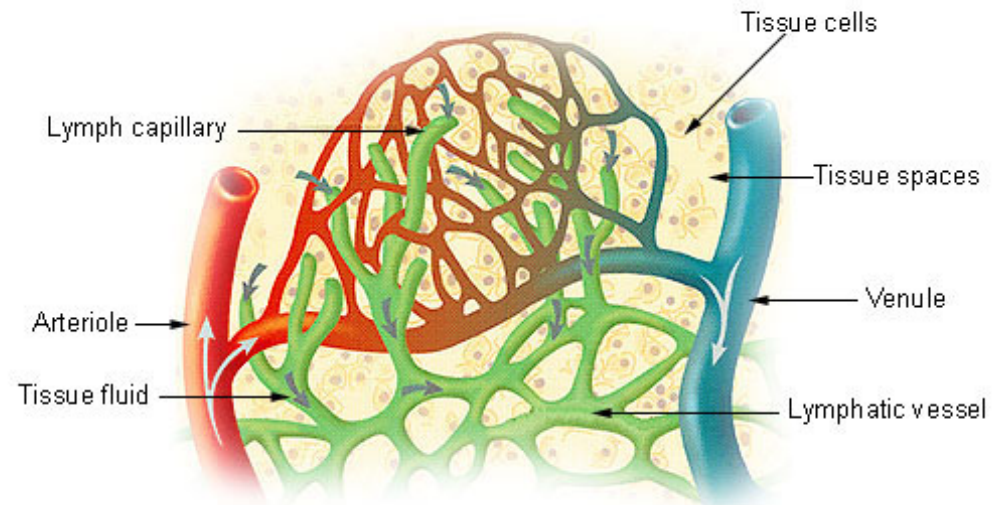
- Tiny to large vessels
- they catch ICF(intercellular fluid) that bathes the cells and carry it back to the blood vessels
- some have valves

Lymph Nodes

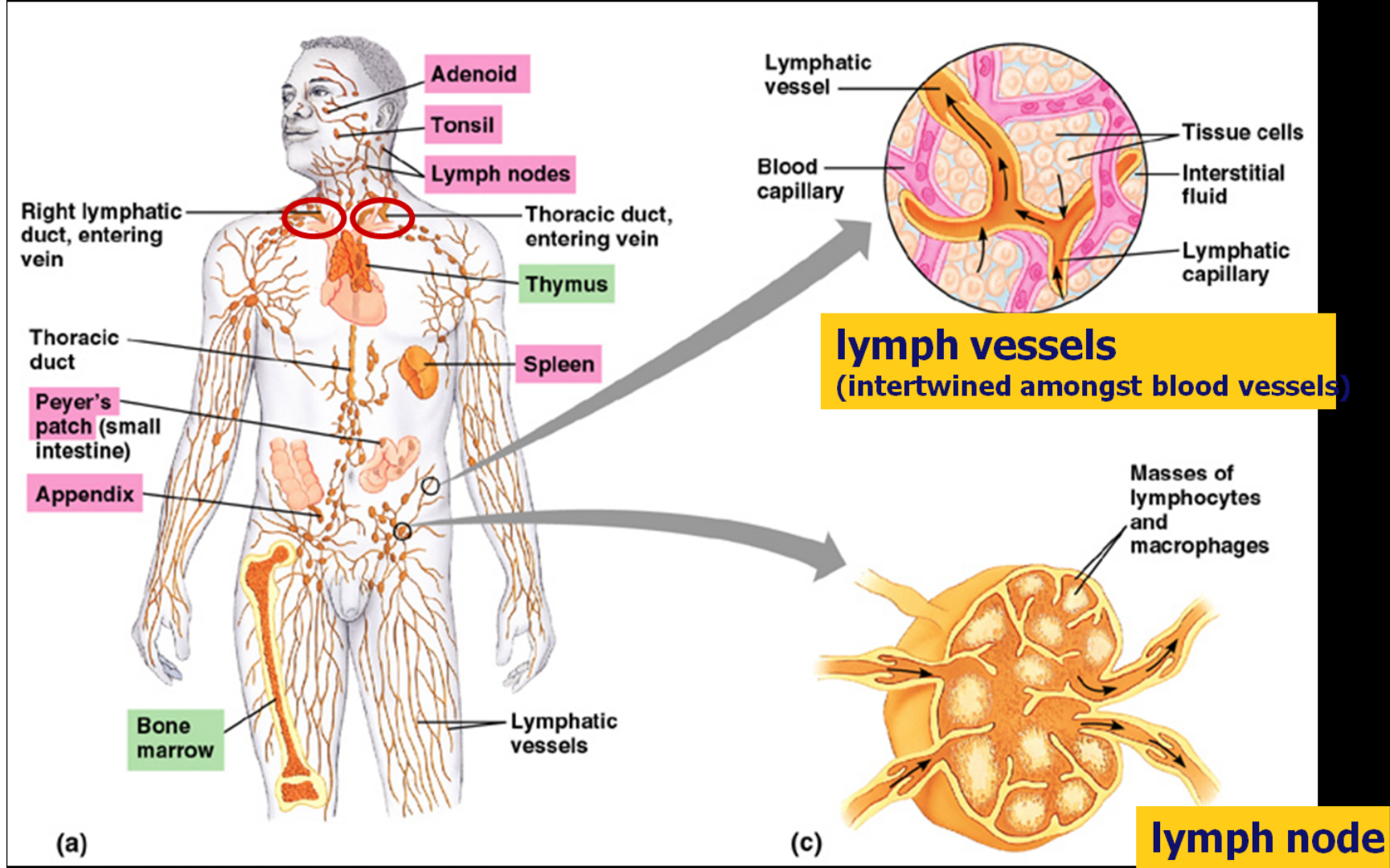
- enlarged regions of major lymph vessels
- have phagocytic WBC's filtering out bacteria and dead cells from the lymph

white blood cells

Lymph Capillaries in the Tissue Spaces



Production of white blood cells & traps "foreign" invaders



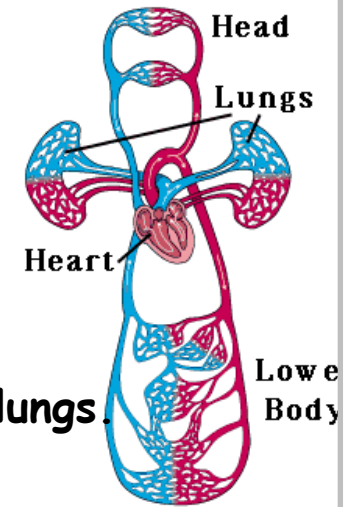
PATHWAYS OF CIRCULATION

1. Pulmonary:

* Pathway of blood between heart and lungs.

* 2. Systemic:

Pathway of blood to all other parts of the body except the lungs.



A. Coronary:

System of blood vessels that supply blood to the heart.

B. Hepatic- Portal:

Transport blood from digestive tract to liver.

(Aorta → capillaries of intestine → portal vein → liver
hepatic vein → I. Vena cava → rt. atrium)

• C. Renal:

Carries blood to and from kidneys. Wastes are filtered out from blood and excreted by kidneys.

What is the function of Human Blood?

-When someone donates blood, how does this blood get replaced?

Bone Marrow makes
New RBCs & WBCs



-Why do we need blood anyway?

- Carries Nutrients,
& O_2 to the cells

- Carries wastes away from the cells

- Distributes heat

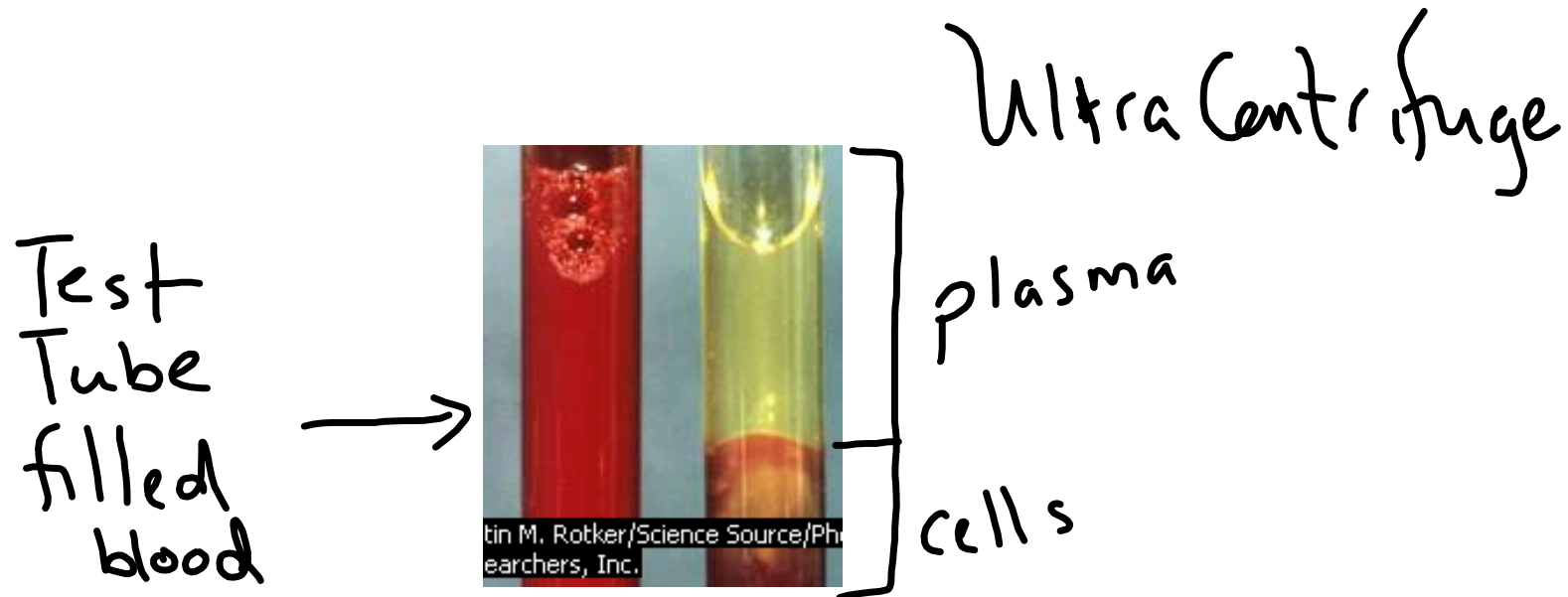
- Carries Hormones around the
body.

- Protects
(WBCs) body from pathogens

BLOOD

Serves as a transport medium helping to maintain homeostasis for all cells of the body.

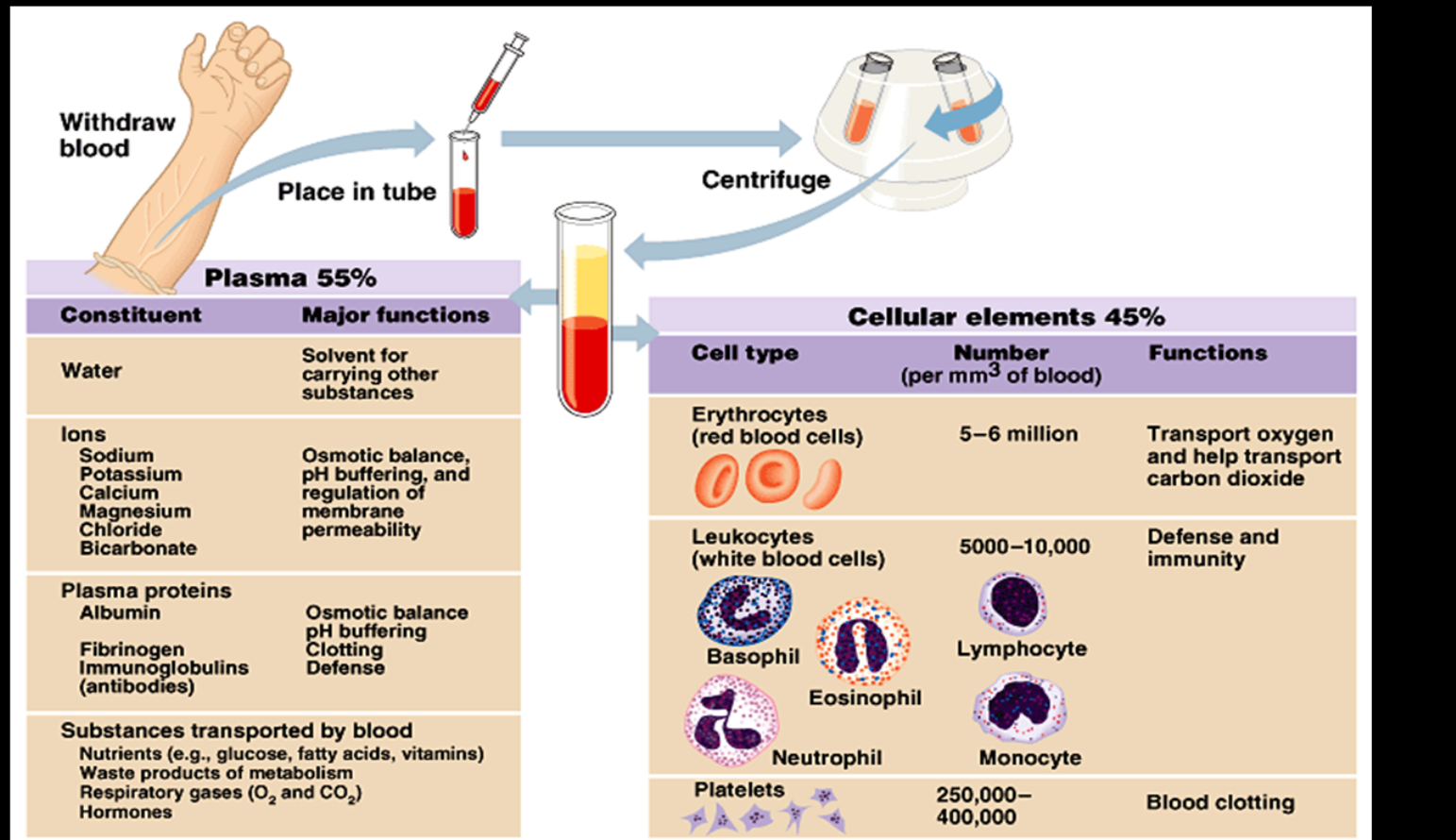
- Transport nutrients, oxygen, and wastes
- Regulate body temp
- Protection (white blood cells)

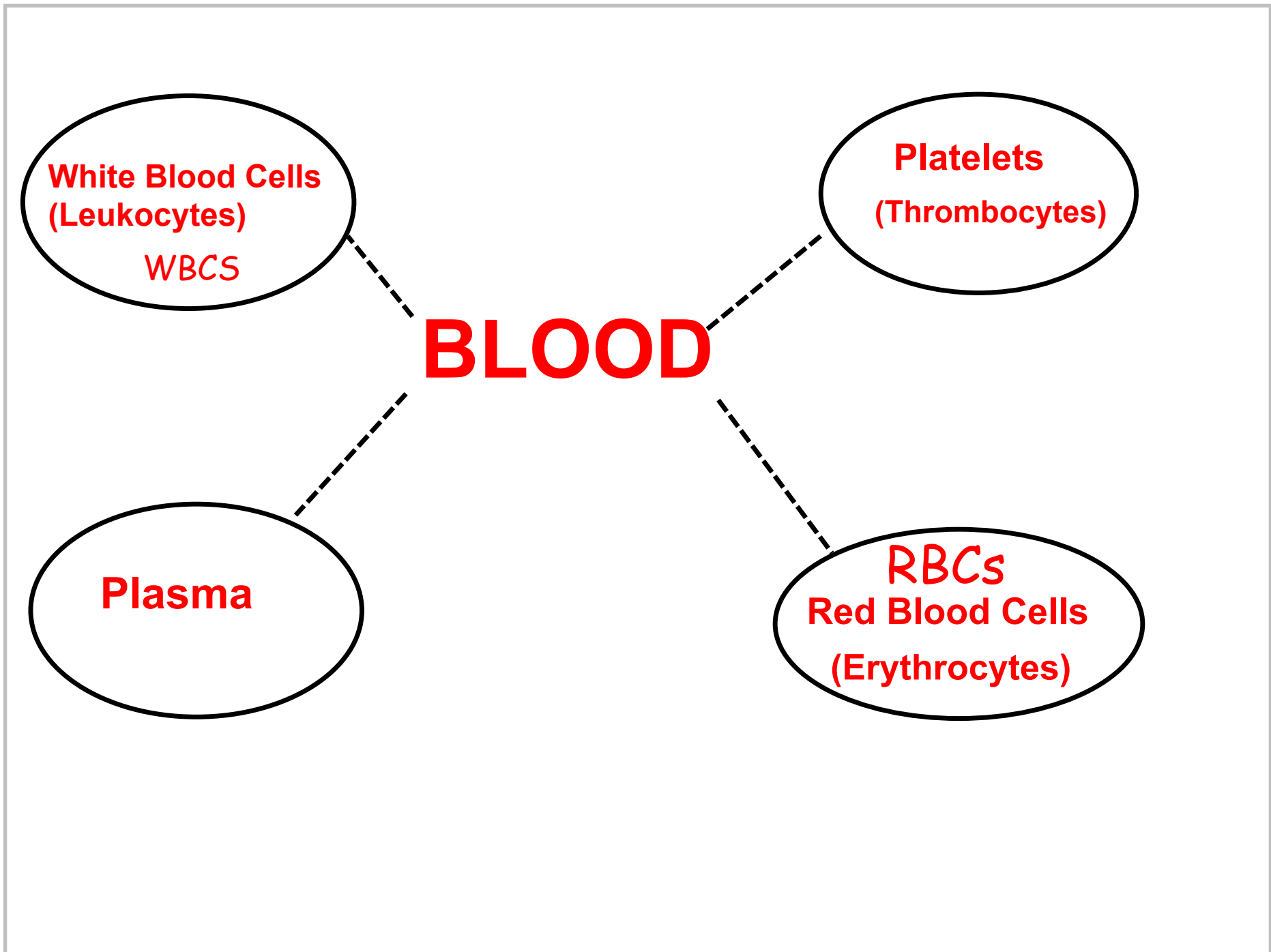




Plasma

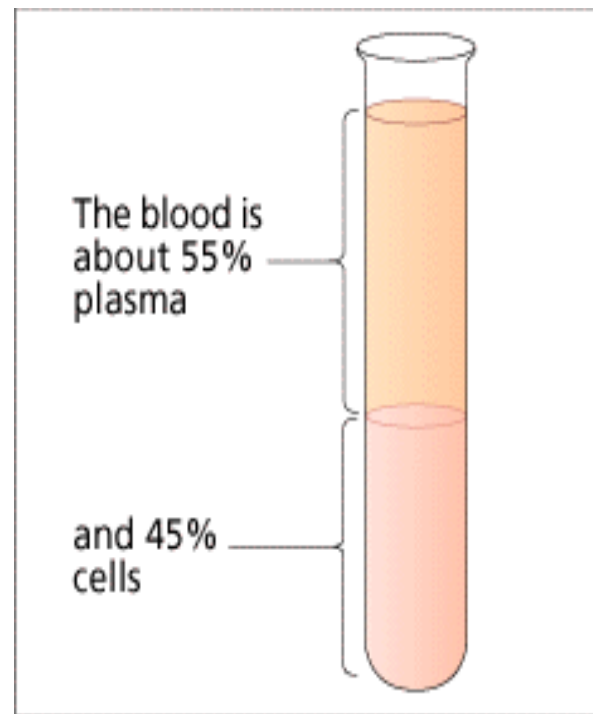
plasma





A. PLASMA:

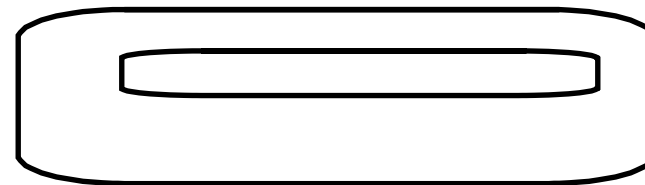
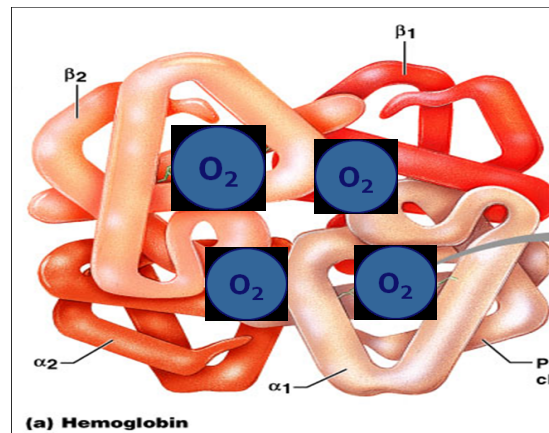
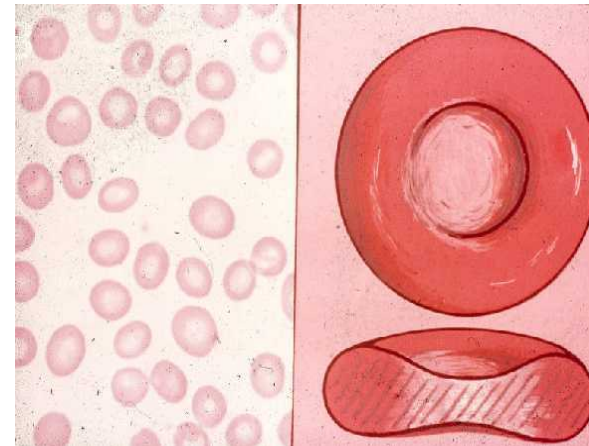
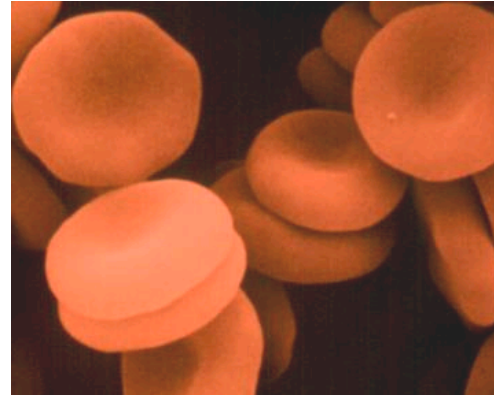
- Liquid portion of blood.
- 90% water,
- Carries wastes(CO₂), hormones, nutrients, antibodies, enzymes, and clotting factors.



Red Blood Cells (Erythrocytes)

- Carry oxygen
- Lack a nucleus
- Biconcave disc shaped
- Contains an iron containing molecule called hemoglobin that allows the RBC to bind with oxygen.(Gives blood its red color)
- Made in bone marrow
- Live 120 days
- 5 million/mm³

O₂ - taxi cabs



White blood cells (WBC)

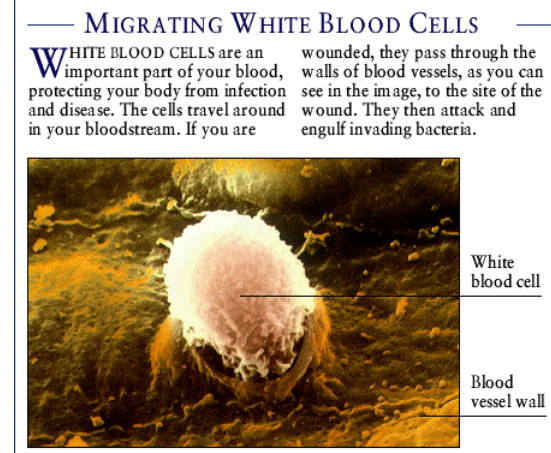
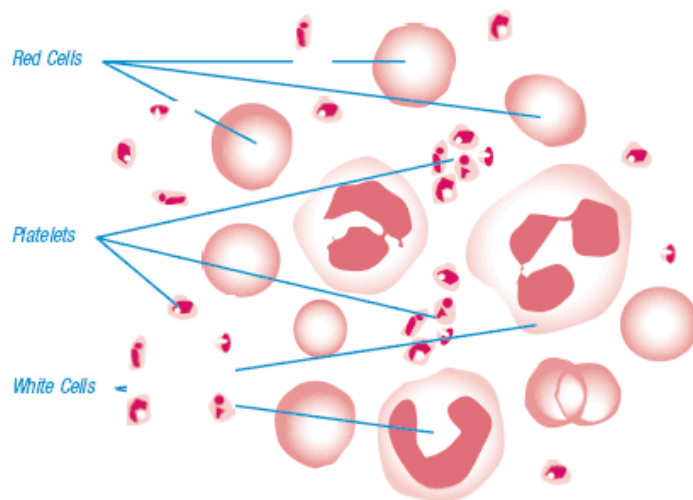
- Protect body against infection [invading pathogens]
- Larger than RBC
- at least 1 nucleus
- Produced by bone marrow and lymphatic tissue
- Normal amount 6,000-8,000/mm³ they increase when there is an infection. **Fewer than RBCs**

2 types:

1. Phagocytic-engulf and destroy bacteria
2. Lymphocytes-associated with immune response. Produce antibodies that attack foreign matter (antigen).



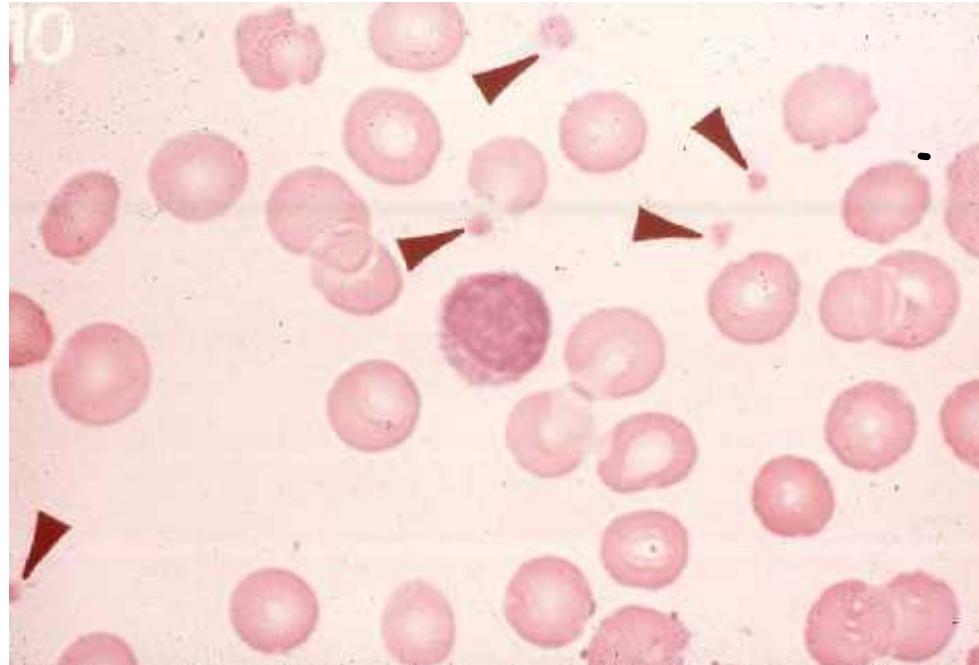
[name tag]



PLATELETS (Thrombocytes):

- Small cell fragments
- Trigger blood clotting process. (Involves enzymes)
- Clotting: solidification of blood at the site of an injured blood vessel.

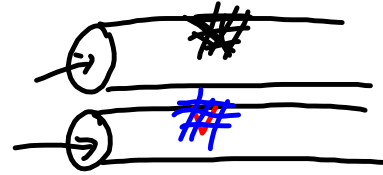
Clotting involves a series of enzyme-controlled reactions.



Blood clotting

- a series of complex reactions leading to the formation of a fibrin meshwork that prevents the loss of blood.

1. B.V. is injured
2. platelets stick to broken vessel wall



They release a series of enzymes(**thromboplastin**)

Prothrombin
(always in the blood)

↓
Thrombin

Fibrinogen(always in blood)

↓
Fibrin
(forms meshwork
traps RBCs &
platelets)

[patch]

↓
water
evaps.

SCAB formation

epithelial cells grow over
wound.

- Problems
- vit. K deficiency
- hemophilia
- stroke
- heart attack

