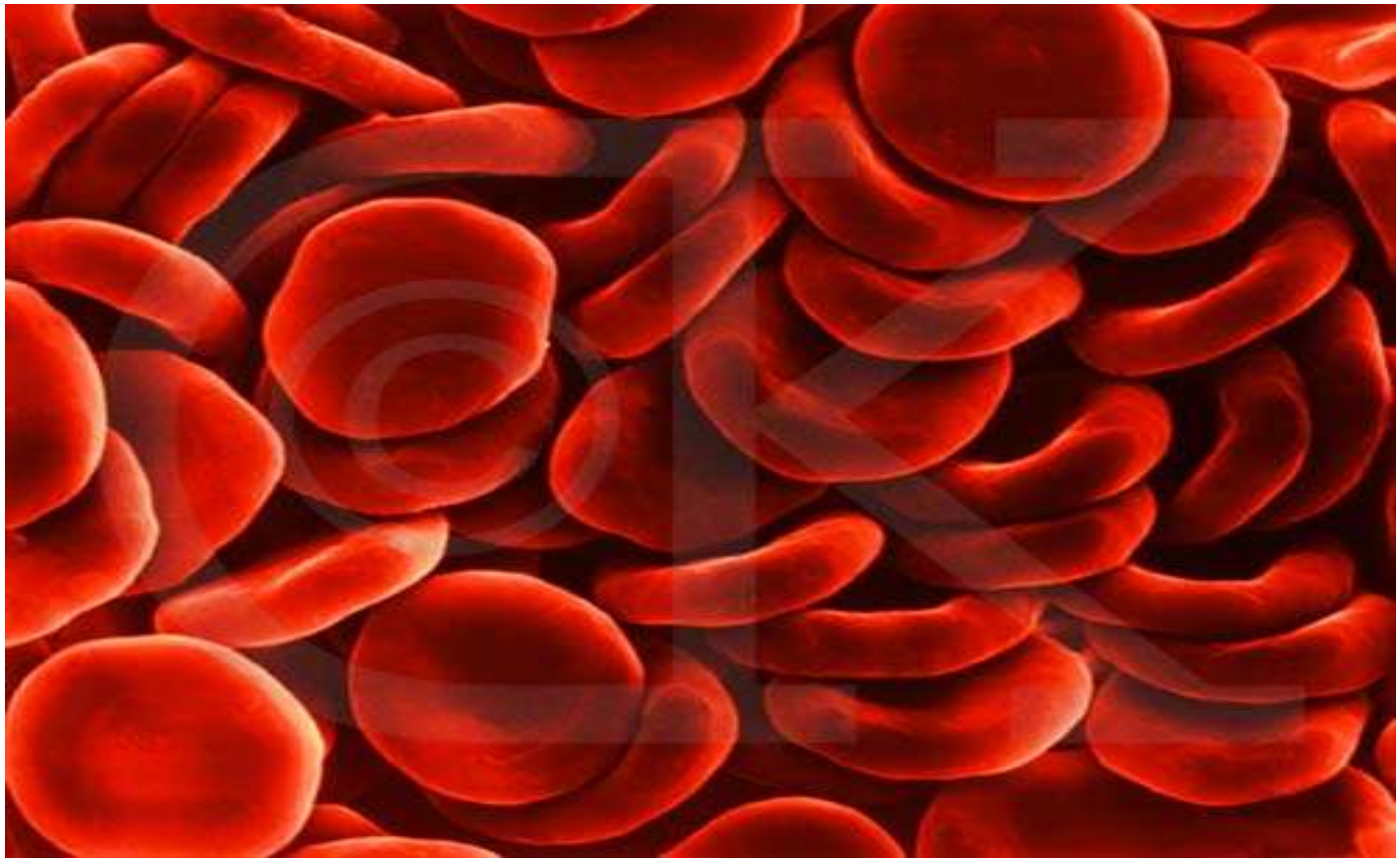
WBCs &Platelets



Prof. KHALED ABDEL-SATER,
PROF. OF PHYSIOLOGY

Study Objectives

By the end of the lecture the student will able

- To mention different types of WBCs, normal count and demonstrate functions of each type.
- To describe the stages of hemostasis.

WHITE BLOOD CELLS (WBCs)

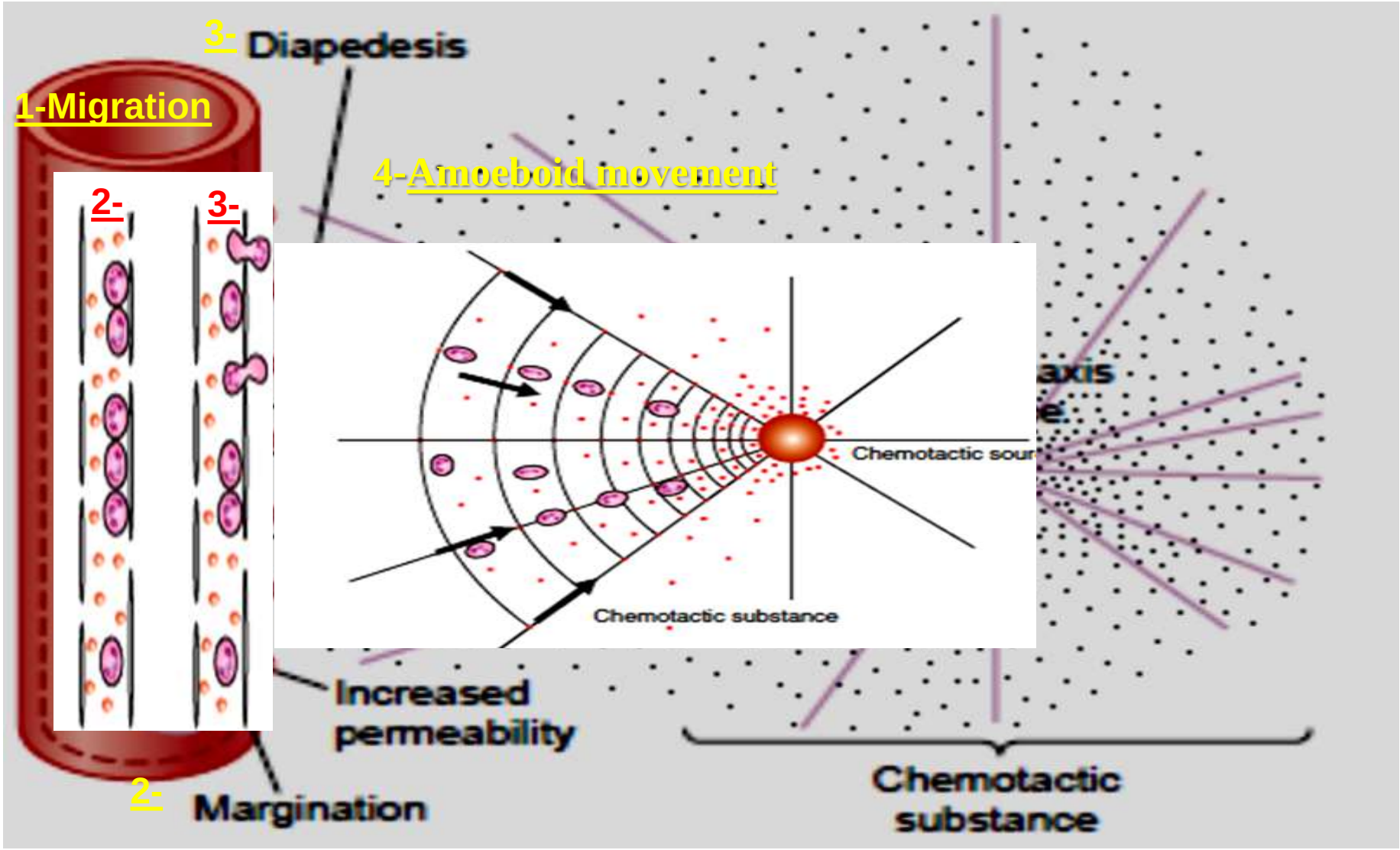
- **Number:** Total WBC count = 4000-11000/ mm3.
- **Types:** Differential WBC count (DC):

Type	Percentage %	Average%
Neutrophils	50 – 70	60
Lymphocytes	20 - 40	30
Monocytes	2 - 8	6
Eosinophils	1 - 4	3
Basophils	0 - 1	1

Never **L**et **M**onkey **E**at **B**anana

WHITE BLOOD CELLS (WBCs)

1-Neutrophils (= Microphages):



2-Esinophils

1-Antiallergic.

2-Antiparasite.

3-Basophils

1-Release of heparin (anticoagulant).

2-Release of histamine (Production of allergy).

4- Lymphocyte

A) T-lymphocytes: Responsible for cellular immunity (i.e. they adhere to foreign antigen such as virus & bacteria and destroy it).

B) B-lymphocytes: Responsible for humoral immunity (i.e. they differentiated → plasma cells that secrete γ-globulin antibodies which is the major defense against bacterial infections).

5-Monocyte (=Macrophages):

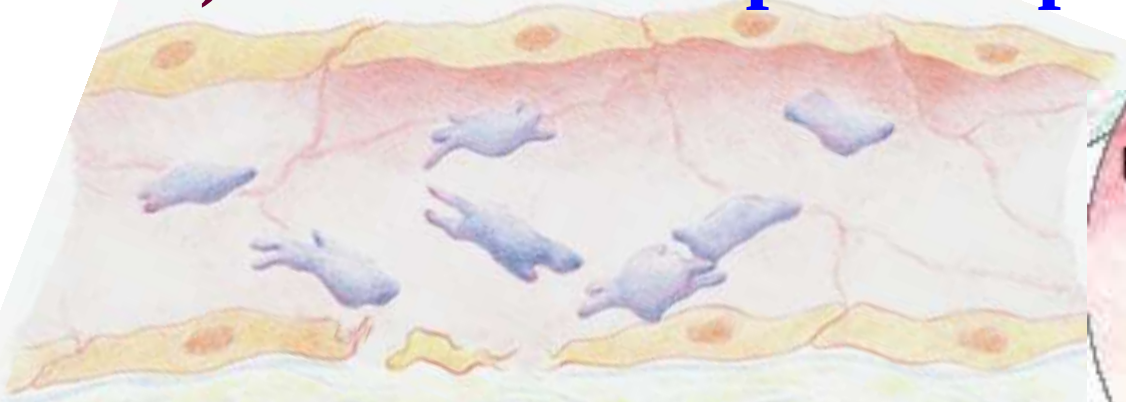
1- Highly phagocytic cell.

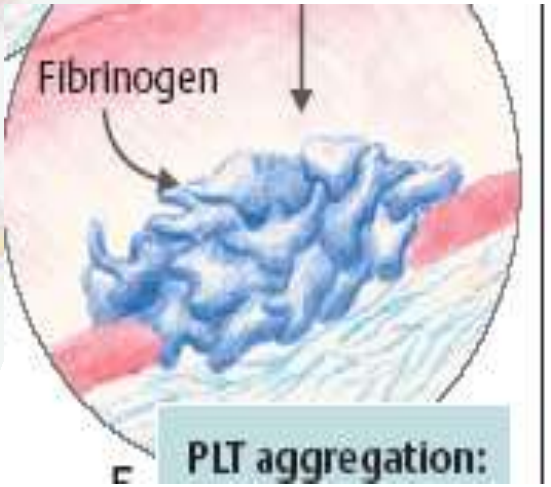
2- Tissue repair after damage.

Hemostasis: Def. Stoppage of bleeding.

I) **Vasoconstriction of the injured vessel.**

II) **Formation of platelet plug.**





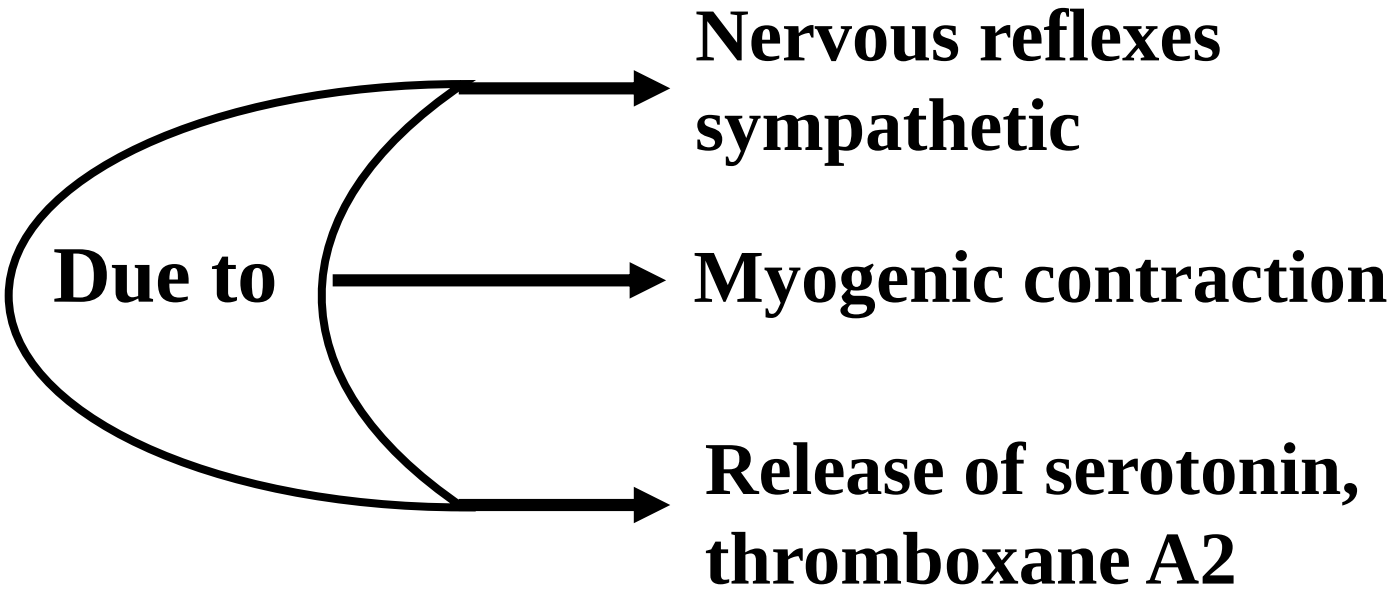
III) **Blood coagulation**

IV) **Clot retraction**

HEMOSTASIS

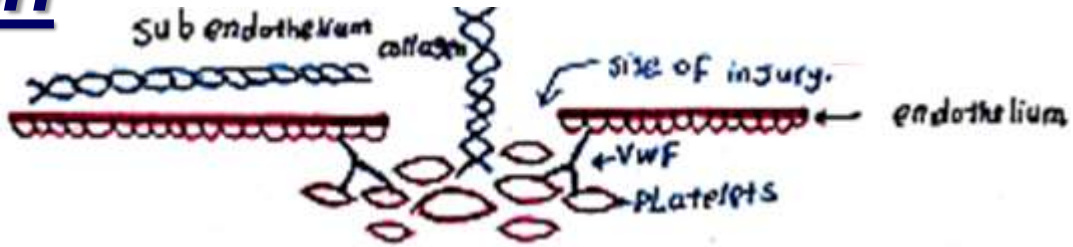
I) Vasoconstriction of the injured vessel

occurs immediately after injury



II) Formation of platelet plug

A- Platelet adhesion



Injury

Exposure of sub-endothelial collagen

Platelets adhere to collagen

B- Platelet activation.

C- Platelet aggregation.

HEMOSTASIS

III-Blood Coagulation

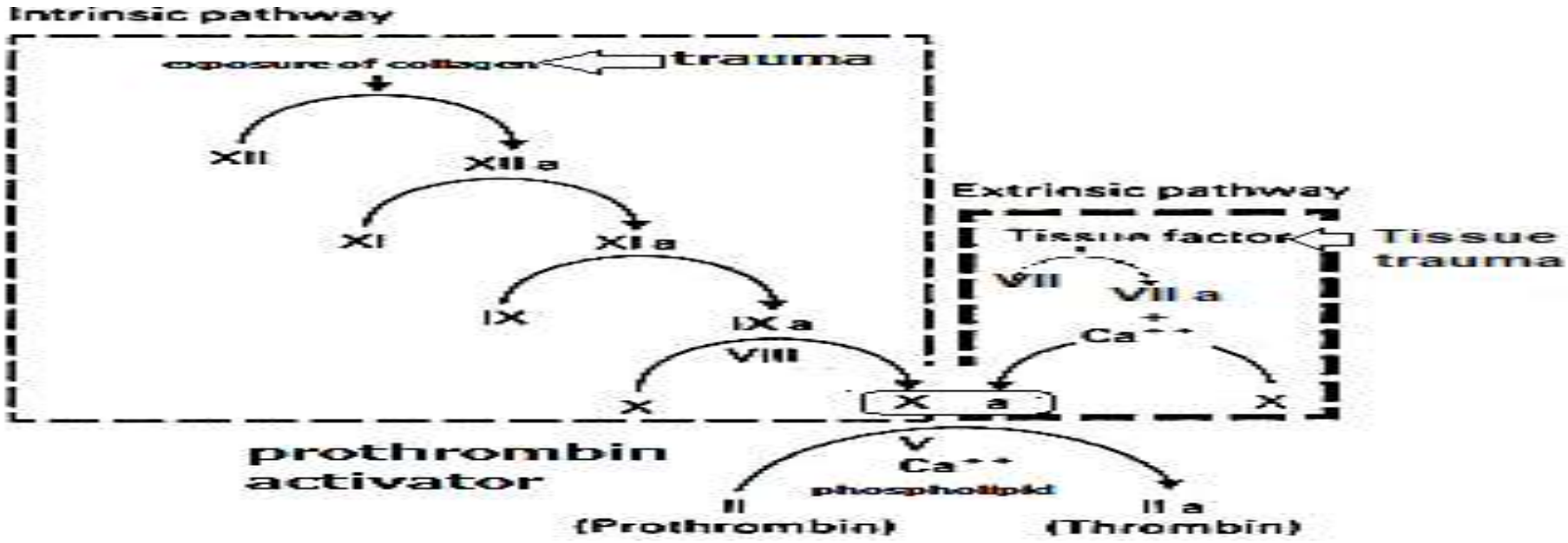
Factor[a]	Names
I	Fibrinogen
II	Prothrombin
III	Thromboplastin
IV	Calcium
V	Proaccelerin, labile factor, accelerator globulin
VII	Proconvertin, serum prothrombin conversion accelerator (SPCA), stable factor
VIII	Antihemophilic factor (AHF), antihemophilic factor A, antihemophilic globulin (AHG)
IX	Plasma thromboplastic component (PTC), Christmas factor, antihemophilic factor B
X	Stuart-Prower factor
XI	Plasma thromboplastin antecedent (PTA), antihemophilic factor C
XII	Hageman factor, glass factor
XIII	Fibrin-stabilizing factor, Laki-Lorand factor


visualparadox.com

HEMOSTASIS

III-Blood Coagulation

Formation of a network of soluble fibrin threads.



IV-Clot Retraction

Soluble fibrin threads convert to insoluble fibrin threads.


Thank you