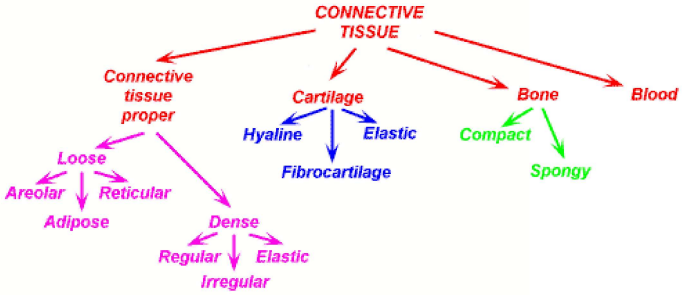
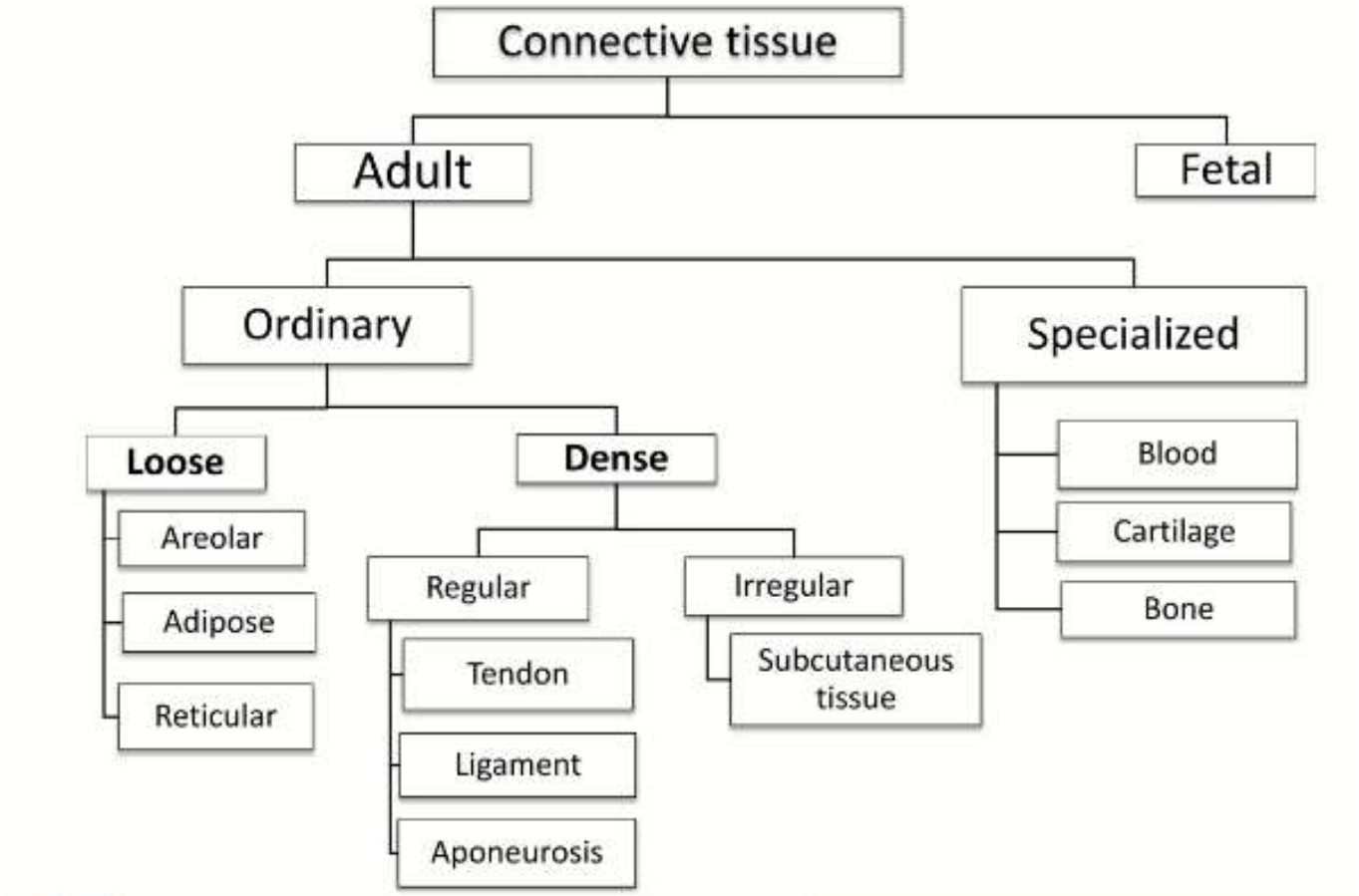
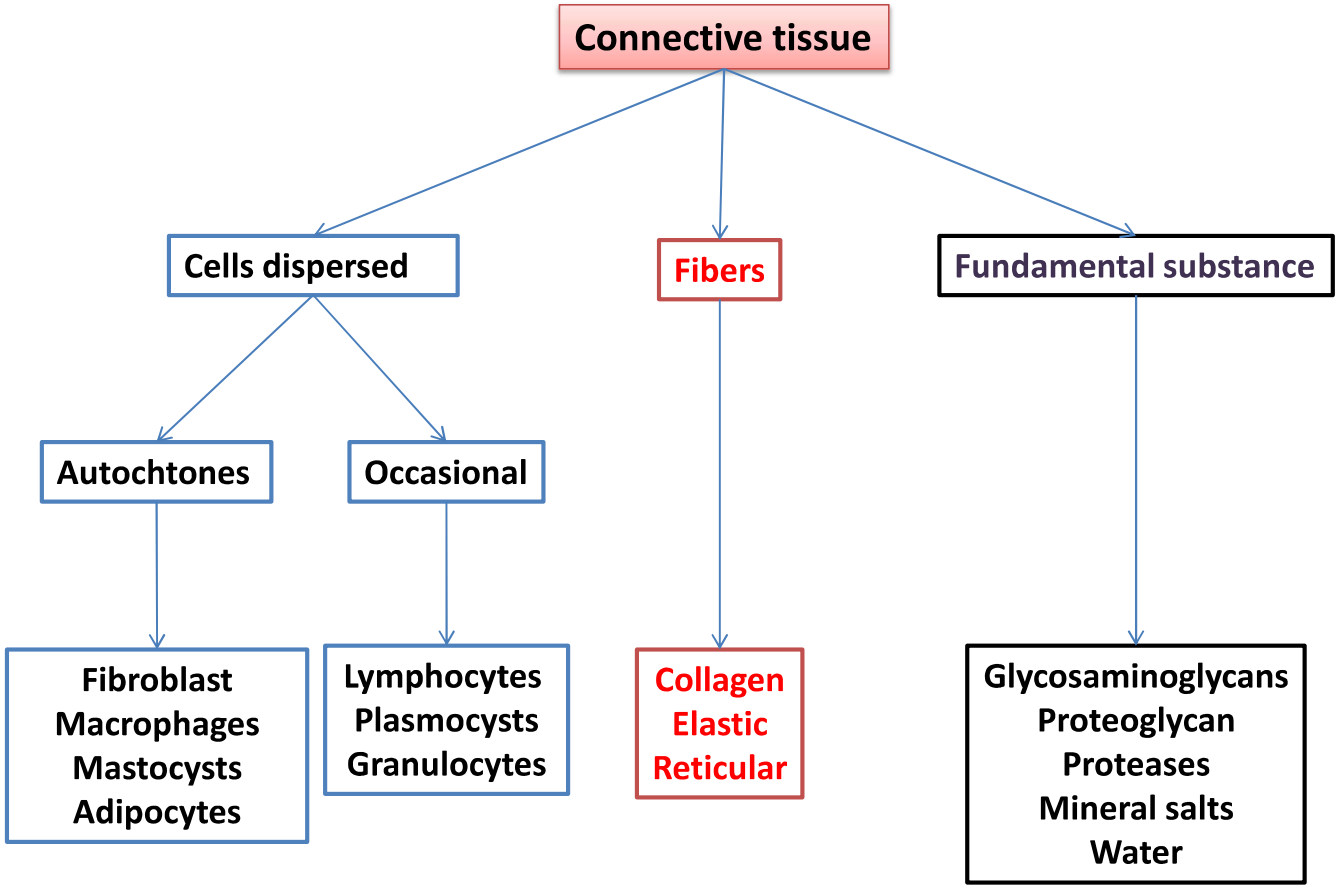
Variétés tissulaires

Les tissus sont classés en :



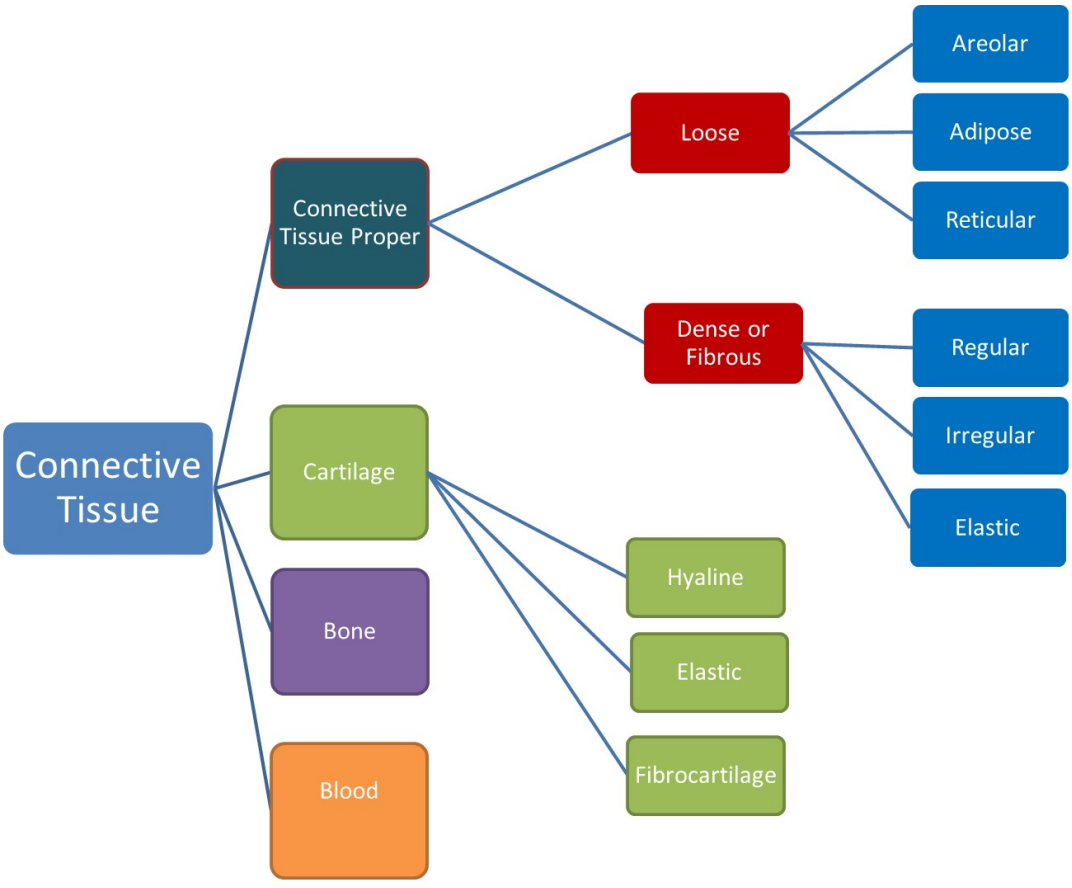
- **Tissus Epithéliaux** :
  - Revêtement
  - Glandulaire
- **Tissus Conjonctifs** :
  - Lâche
  - Fibreux
  - Adipeux
  - Réticulé
  - Tissus conjonctifs spécialisé :
    - Cartilage
    - Os
    - Sang
    - Tissu lymphoïde
- **Tissus Musculaires** :
  - Lisse
  - Strié squelettique
  - Strié myocardique
- **Tissu Nerveux.**





I- Types of connective tissue

Connective tissue divides into **three categories**:



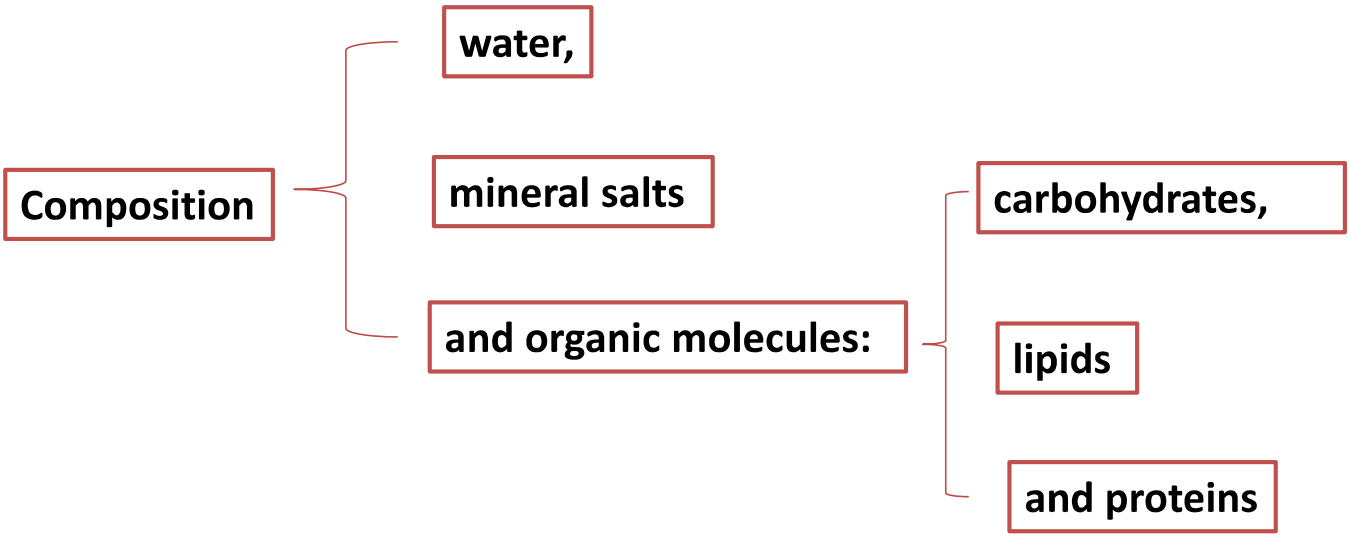
Blood

Definition:
The blood is a specialized connective tissue, comprising a liquid fundamental substance, the **plasma**, within which cells, the **formed elements**, bathe.

Blood = Plasma + formed elements

1. Plasma

- is a yellowish, viscous liquid



2. Formed elements

- of blood are divided into three categories:

1) **Red blood cells** (Erythrocytes, or red blood cells)

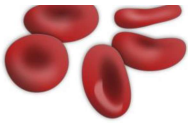
2) **Leukocytes** (White blood cells)

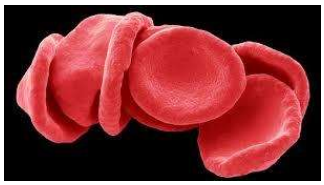
3) **Platelets** (Thrombocytes or Globulins)

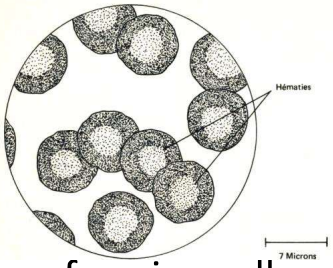
Description, properties and role of the formed elements of blood

A- HEMATIES (Erythrocytes, or red blood cells)

1) Structure: elements in the shape of a biconcave disc. In mammals, they are anucleated, lacking the classical organelles and absolutelv unable to divide. are the most numerous of the formed elements.







2) Property and role:

- **Immobile-**
- **Plasticity and elasticity-**
- **Aggregation** : They tend to stick together by their faces, forming rolls (reversible phenomenon).
- - **Agglutination**: under certain conditions, the red blood cells can stick together but in an irreversible way. This agglutination is due to the formation of antigen-antibody complexes, a phenomenon whose observation was the basis for the discovery of **blood groups**.
- - **Hemolysis**:
- - **Transport**: of oxygen and carbon dioxide
- - **Life cycle**: in humans is about 120 days

B. Leukocytes (White blood cells)

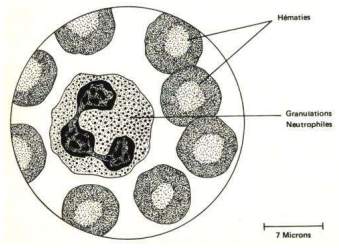
They are characterized by the presence in their cytoplasm of **specific granulations**

- leukocytes
  - granulocytes
    - Neutrophils,
    - Eosinophils
    - Basophils
  - Agranulocytes
    - Monocytes
    - Lymphocytes

They are characterized by the absence in their cytoplasm of specific granulations.

1) GRANULAR LEUKOCYTES

- They are characterized by the presence in their cytoplasm of specific neutrophilic, eosinophilic and basophilic granulations.

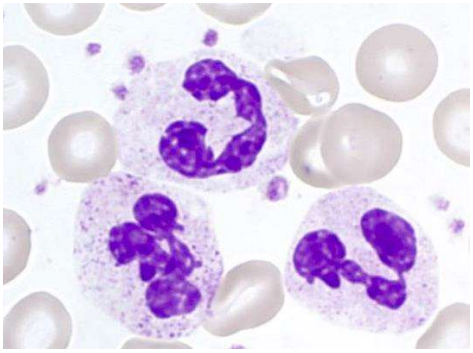


a) Neutrophilic granulocytes:

Numerous; their size is 10 to 12 microns on smears.

➢ **The nucleus** :

- is single,
- central,
- polylobed;
- the lobes have a very dense chromatin,
- are devoid of nucleoli.



➢ **The cytoplasm** Includes

❖ **classical organelles**: mitochondria, ER, Golgi, centrioles, microtubules, inclusions, granulations

❖ and **specific granulations**: neutrophils, fine, numerous, elongated, homogeneously distribution.

1) GRANULAR LEUKOCYTES

a) Neutrophilic granulocytes:

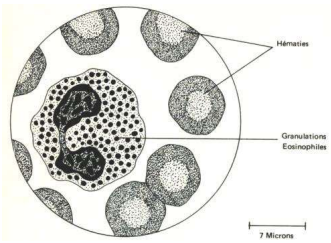
Granulations

These granulations are limited by a membrane; they are rich in hydrolytic enzymes, they are primary lysosomes.

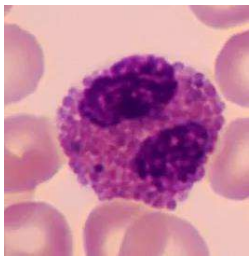
Properties:

- **Mobility**: very mobile by amoeboism movements
- **Phagocytosis**
- **Diapedesis**: i.e. the possibility for neutrophil granulocytes to cross the wall of blood capillaries to pass into the tissues, exert their action and die there.
- **Life cycle**: very short, 3 to 4 days. Unable to divide.

1) GRANULAR LEUKOCYTES

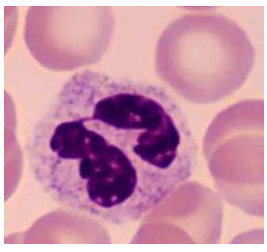


b) Eosinophilic granulocytes



These elements are few in number;
their size is about 14µm.

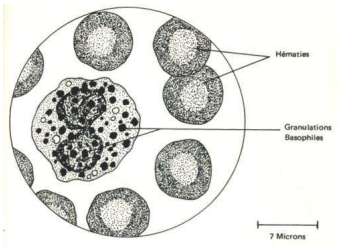
- The **nucleus** is generally bilobed.
- The **cytoplasm** contains the classical organelles and specific granulations (eosinophils which are: large, very numerous, spherical and refractive, homogeneously distributed).
- These granulocytes contain oxidases.



Properties :

- **Diapedesis**
- **Amoeboism** and **phagocytosis** are less marked than the previous one.
- **Life cycle**: varies from 8 to 10 days. Unable to divide.
- These elements are also involved in the **defense** of the body to fight against **allergic phenomena**.

B. Leukocytes (White blood cells)

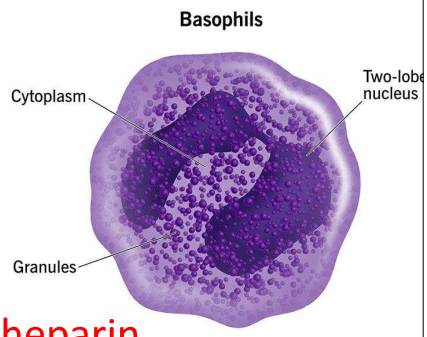


1) GRANULAR LEUKOCYTES

c) Basophilic granulocytes

Very rare, about 10 to 12 microns.

- The **nucleus** is voluminous, oval or horseshoe-shaped.
- The **cytoplasm** has the classic, poorly developed organelles and specific granulations the **specific granulations** :
  - Basophils
  - Voluminous, irregular in size and shape (0.2 to 1 µm)
  - Few in number
  - Heterogeneously distributed
  - Soluble in water
  - Metachromatic



These elements are rich in histamines and heparin.

Properties

- Diapedesis
- Amoeboism and phagocytosis are practically zero.
- Life span: varies from 12 to 15 days. Unable to divide.

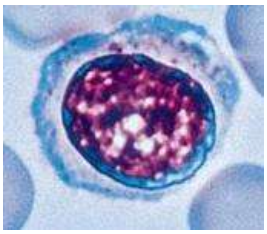
Heparin, an anticoagulant ;

Histamine, which increases the diameter and permeability of the blood vessels, which favors the passage of white blood cells and leads to the formation of an edema.

Histamine stimulates the production of mucus and the contraction of the smooth muscles of the bronchioles in the lungs.

2) AGRANULAR LEUKOCYTES (HALINE LEUKOCYTES)

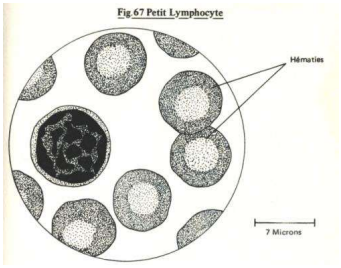
Ils sont caractérisés par l'absence dans leur cytoplasme de granulations spécifiques.



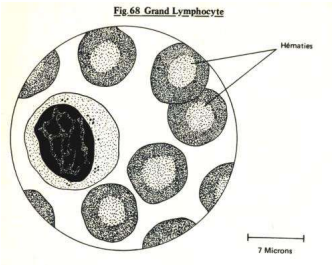
a) Lymphocytes :

Il s'agit pour la plupart d'éléments de petite taille :

Petits lymphocytes:



- **Noyau** :
  - Très volumineux,
  - sphérique,
  - à chromatine très dense,
  - nucléolé.
- **Cytoplasme** : il apparait comme un mince liseré basophile entourant le noyau ; il comporte tous les organites classiques en quantité modérée. Si ce n'est une quantité importante de ribosomes libres.



a) Lymphocytes :

- **Petits lymphocytes:**

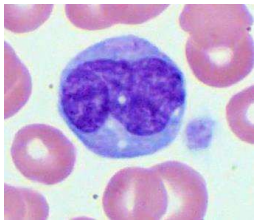
-Un faible pourcentage de lymphocytes, tout en ayant une morphologie sensiblement identique, présente une taille légèrement supérieure ; il s'agit des :

Grands lymphocytes

Propriétés des lymphocytes:

- ***Diapédèse & d'amoeboisme :*** sont très marquées,
- ***Phagocytose*** : est nulle.
- ***La durée de vie :*** variable quelques jours, plusieurs mois, des années

Ces éléments interviennent également dans la défense immunitaire de l'organisme.



b) Monocytes

- Ce sont des cellules de grande taille.
- Ils sont peu nombreux dans le sang.

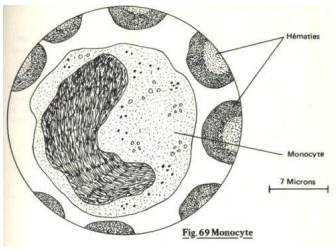


Fig. 69 Monocyte

- Noyau :
  - ovalaire ou réniforme,
  - excentré.
  - La chromatine est fine (aspect peigné),
  - sans nucléole.

- **Cytoplasme** est discrètement basophile et comporte tous les organites classiques en quantité modérée, en particulier quelques lysosomes.

Propriétés

- Ils possèdent des propriétés de *Diapédèse, d'***amoeboisme** et de **phagocytose** marquée.

- Ces éléments font partie du système des phagocytes Mononucléés.

- La possibilité de pouvoir se diviser dans les tissus.

C. Platelets (Thrombocytes or Globulins)

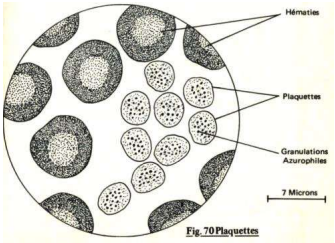
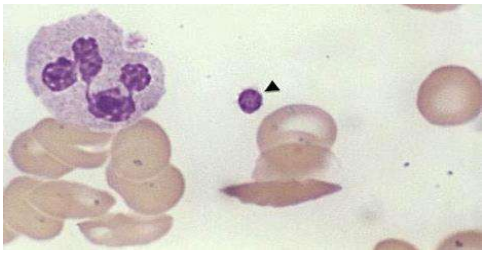


Fig. 70 Plaquettes



Il s'agit d'éléments :

- ovalaires,
- de petite taille.
- Elles sont anucléées
- et comportent une partie centrale, le **chromomère**, et une partie périphérique, le **hyalomère**.

Propriétés

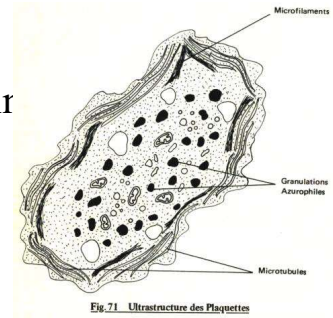


Fig. 71 Ultrastructure des Plaquettes

- Leur déplacement est purement passif suivant le courant sanguin
- Elles sont douées d'une grande viscosité et de contractilité
- Elles peuvent très facilement s'agréger entre elles
- Elles ne peuvent se diviser
- Leur durée de vie varie de 8 à 10 jours.

Elles jouent un rôle fondamental dans la **coagulation**, intervenant dans la formation du thrombus blanc de coagulation et dans la rétraction du caillot.