

Al-Mustaqbal University College

First Lecture

Bio chemistry

Department of Medical Physics

M.S.C.Doaa.Nassr.Alhosainy

Biochemistry

it is one of the branches of natural sciences and it is specialized in studying the chemical composition of cell parts, and studying the different biological reactions that take place within these living cells, in terms of structure and composition, or in terms of catabolism and energy production ,whether they are simple organisms such as (bacteria, fungi) or as complex as humans, animals and plants.

Biochemistry is divided into different disciplines

1-Descriptive Biochemistry: It includes a descriptive study of the chemical cell components

2- Dynamic Biochemistry: It studies the chemical reactions that take place inside the cell Vitality

3- Animal biochemistry : involves the study of the cell From animal structure and chemical reactions.

4-Plant Biochemistry: It includes the study of the Plant properties Chemically as a photosynthesis process and chemical content Of plants and the energy characteristics of the reactions that take place in the cell.

5- Microbiology: Microbiology is distinguished by its power On the study of chemical reactions that occur in microorganisms such as Viruses and Bacteria

The basic components of living matter

1-Water: makes up a large proportion of the body of a living being, 60% of the adult human body , 70% in children , 97% in fetuses.

2-Mineral salts:

a- Major metals such as (Cl,k,Na,Ca).

b- Trace metals such as (Fe,Cu,F,I)

3-Organic compounds:

a- **Structural compounds:** It includes four main components(H,O,N,C) such as Proteins, Fats, carbohydrate. These compounds make up the skeletal structure such as Membranes, Muscles ,Bones.

b- **Non-structural compounds:** Functionally necessary, but not structured such as Hormones ,Enzymes, Vitamins.

Metabolism

It is a biochemical process in which the body converts food into energy, through a series of chemical reactions in which it destroys nutrients inside the digestive system and turns them into energy through building and destroying cells and tissues.

Types of metabolism:

1- Anabolism: it is the process in which small molecules are converted into larger and more complex molecules of carbohydrates, proteins and fats.

In this process body tissues are built up and energy stores.

2- Catabolism: it is a process that produces energy for cellular activities, in which large molecules, mostly fats and carbohydrates, are broken down to produce the energy needed for anabolic metabolism.



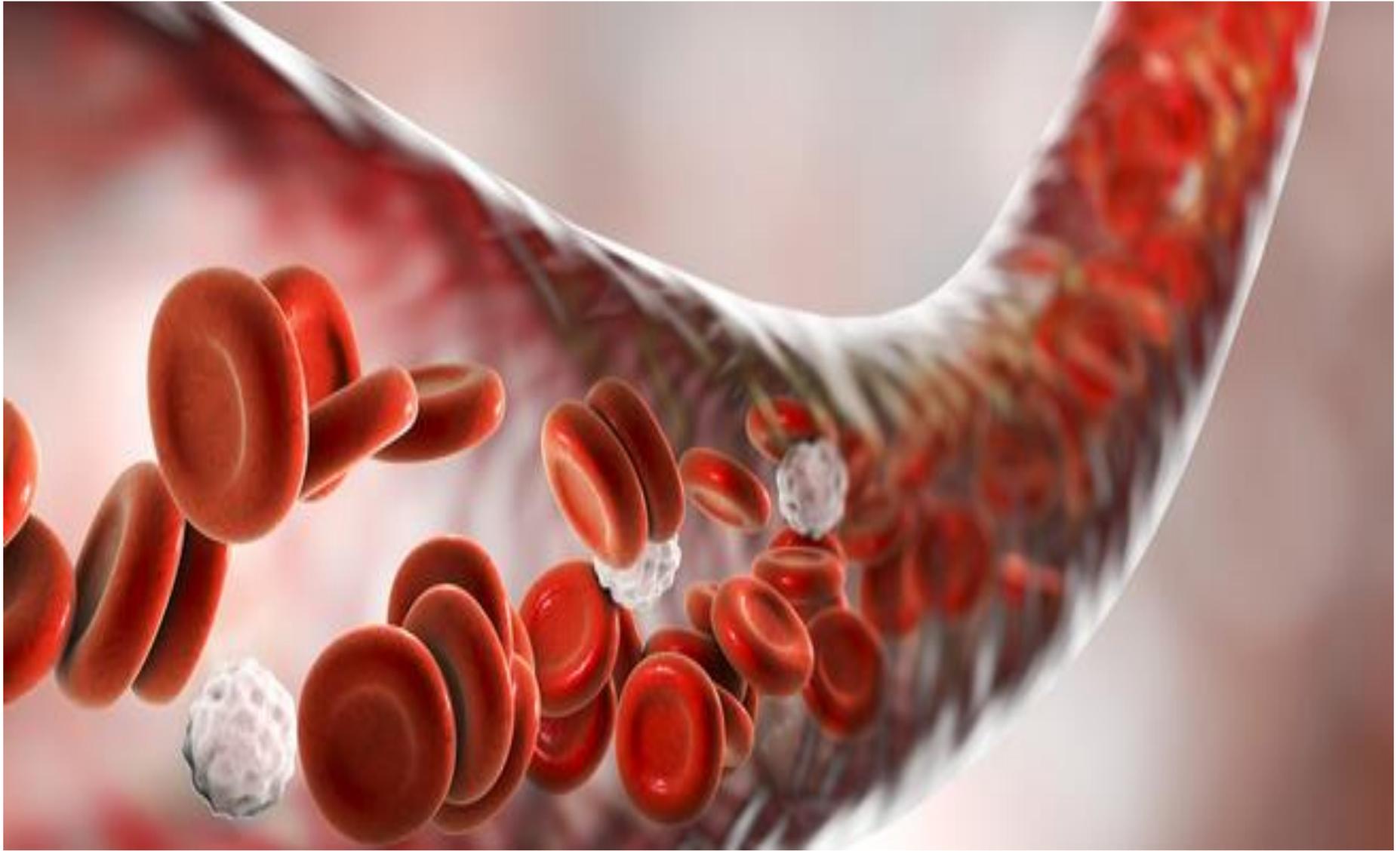
شكل (3-8): ملخص لعملية الأيض التي تشمل عمليتي الإنباء والتفويض.

What Is The Blood

Blood is a constantly circulating fluid providing the body with nutrition, oxygen, and waste removal.

Blood is mostly liquid, with numerous cells and proteins suspended in it, making blood

"thicker" than pure water..



Major blood components:

1- plasma: It is the blood fluid that carries the rest of the blood components. Plasma contains proteins that help blood to clot, transport substances through the blood, and perform other functions. Blood plasma also contains glucose and other dissolved nutrients.

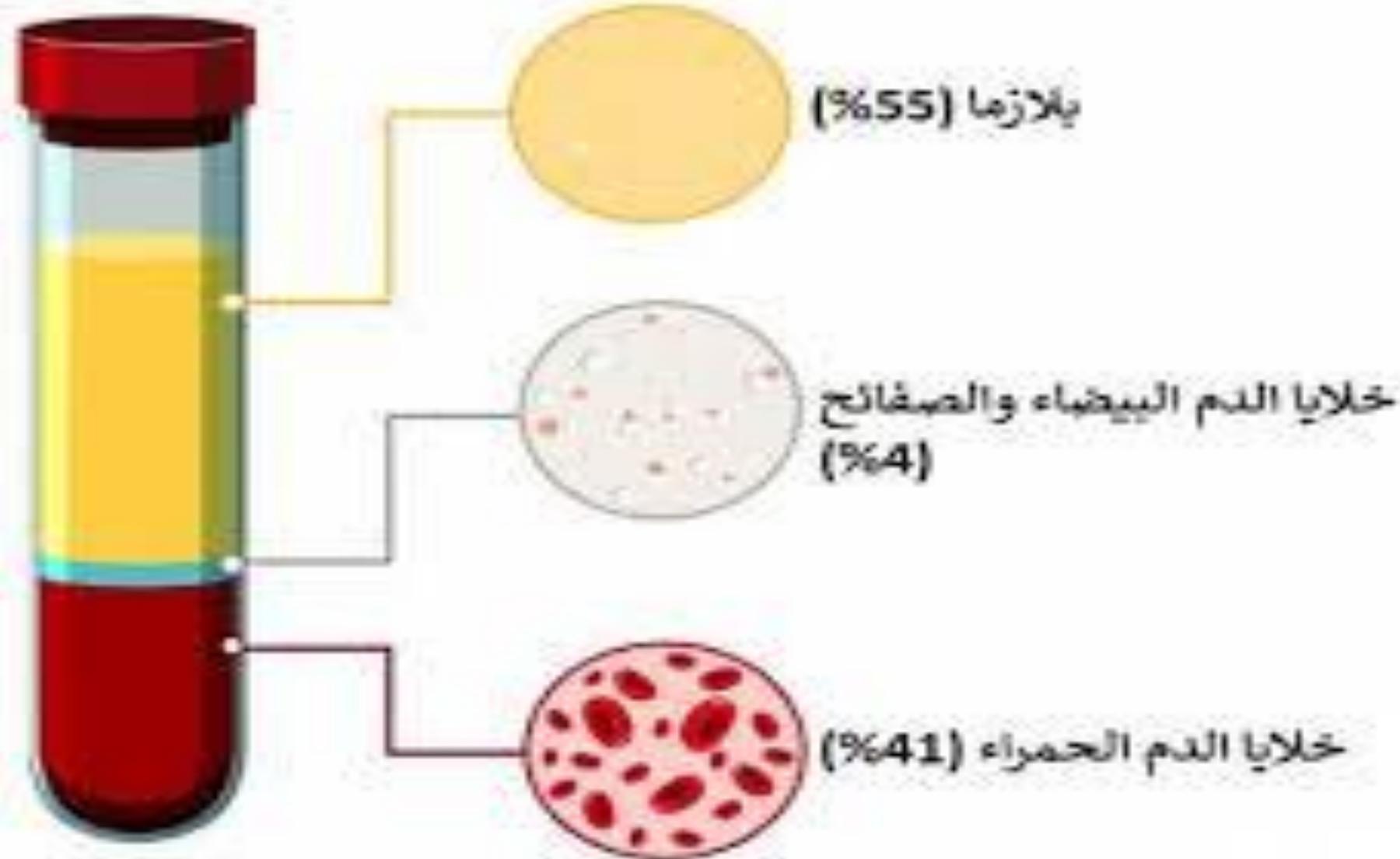
2- Red blood cells: give blood its distinctive color and are responsible for transporting oxygen to cells and removing carbon dioxide.

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3- White blood cells: These cells work as part of the immune system to help fight various diseases.

4- Platelets: are mainly responsible for coagulation processes

مكونات الدم



GOOD LUCK

