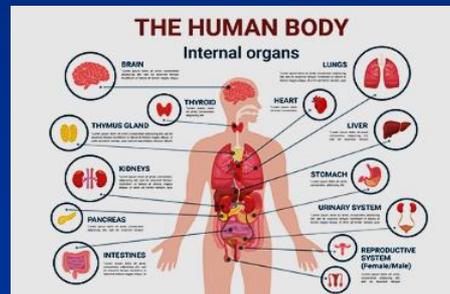




I. Introduction to Physiology



Sherif W. Mansour
Prof. of physiology
Mu'tah School of medicine

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What is Physiology?

- **Human physiology:** basic sciences dealing with normal life phenomena of the **human body**.
- **Physiology:** to know **how & Why** .
- **Goal of physiology:**
Explain the physical and chemical factors that are responsible for the origin, development and progression of **life**.

The fact that we remain alive is the result of **complex control systems**.

Hunger makes us seek food,

The cells that make up the bodies of the simplest multicellular animals, exist in extracellular fluid (ECF).

From this fluid, the cells take up **O₂ and nutrients**; into it, they discharge **metabolic waste products**.

In animals with a closed vascular system, the **ECF** is divided into **two** components: the **interstitial fluid (ISF)** and the **circulating blood plasma**.

The **plasma** and the cellular elements of the blood, principally **red blood cells**, fill the vascular system, and together they constitute the total blood volume.

The **interstitial fluid (ISF)** is that part of the **ECF** that is outside the vascular system, bathing the cells.

About **one third** of the total body water (TBW) is extracellular; the remaining **two thirds** is intracellular (**ICF fluid**).

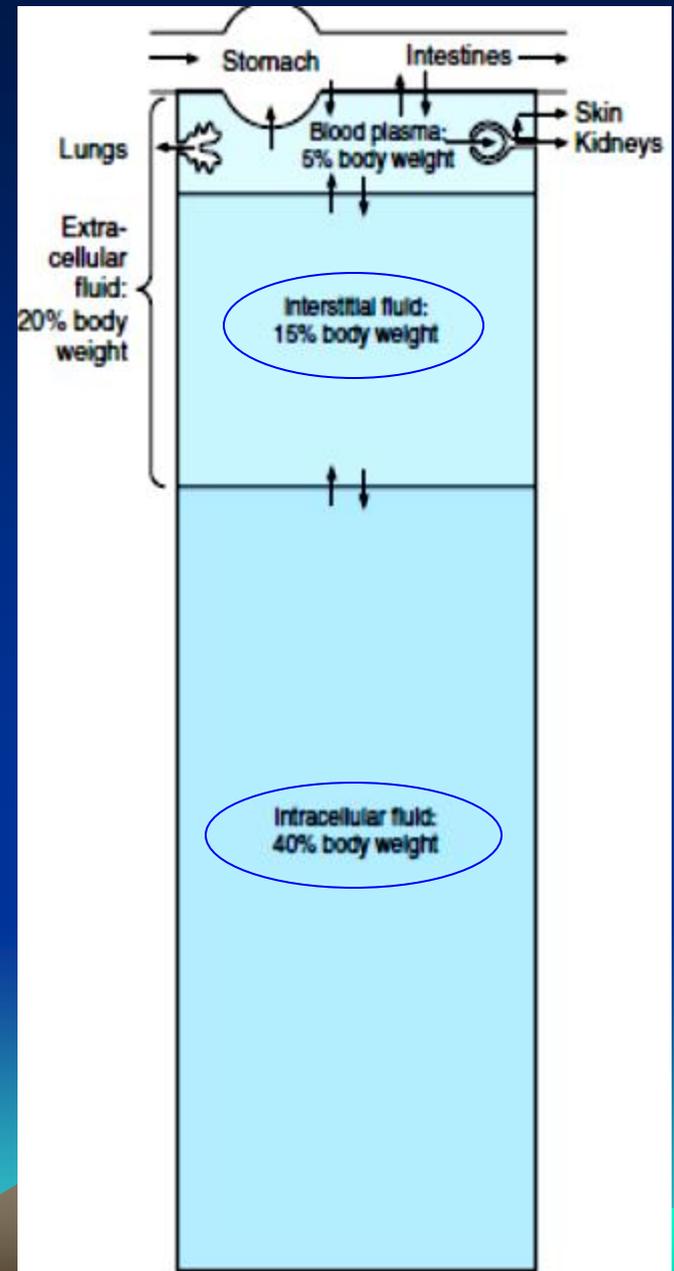
Body Composition

In the average young adult male (70 Kg), 18% of the body weight is protein and related substances, 7% is mineral, and 15% is fat. The remaining 60% is water.

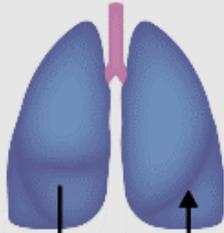
-The **intracellular** component of the body fluids accounts for about **40%** of body weight and the **extracellular** component for about **20%**.

-Approximately 25% of the extracellular component is in the vascular system (plasma = **5%** of body weight) and 75% outside the blood vessels (**interstitial fluid** = **15%** of body weight).

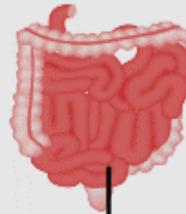
The total **blood volume** is about **8%** of body weight.



Lungs



Gastrointestinal tract



Kidneys



Blood plasma

O_2 CO_2

H_2O Nutrients Ions

H_2O Ions Nitrogenous wastes

Interstitial fluid

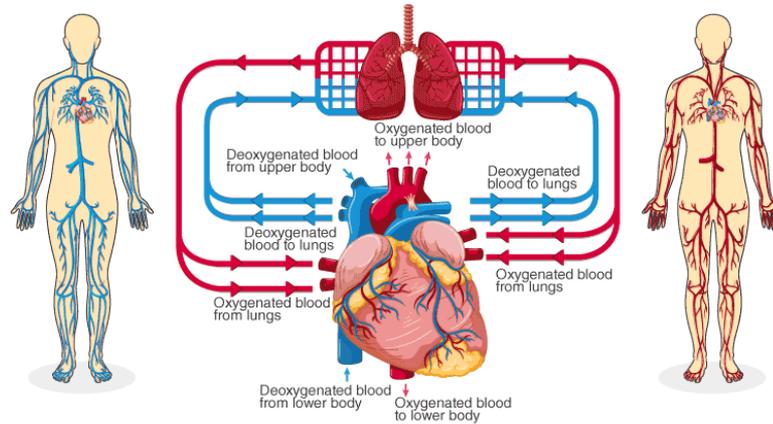
O_2 CO_2

H_2O Nutrients

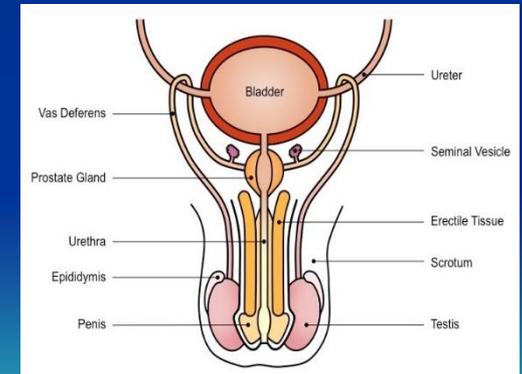
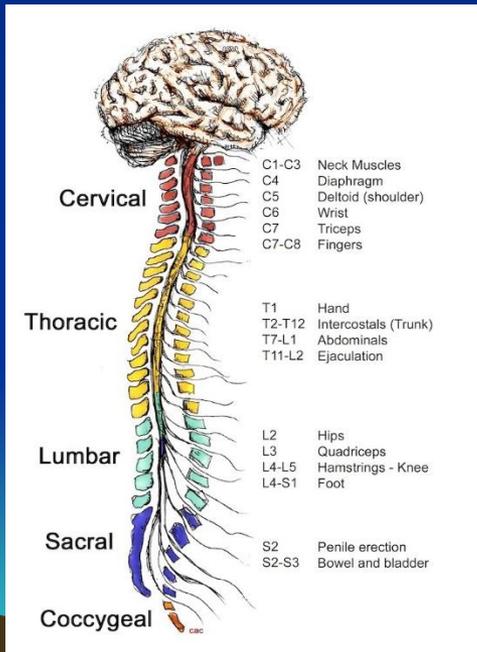
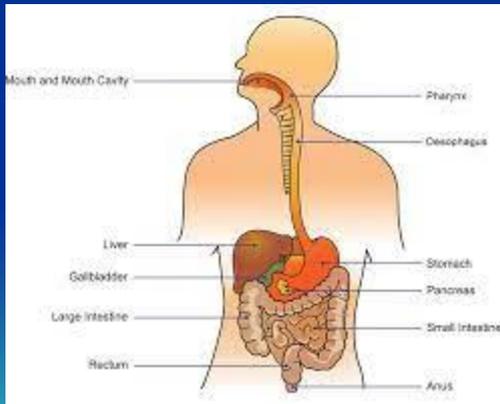
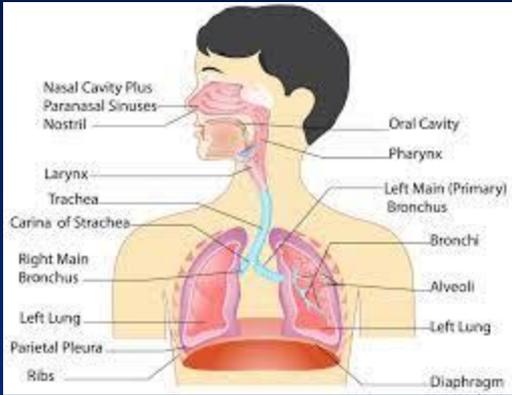
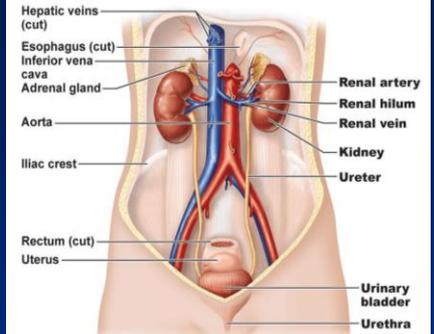
Ions Nitrogenous wastes

Intracellular fluid

HUMAN CIRCULATORY SYSTEM TRANSPORTATION



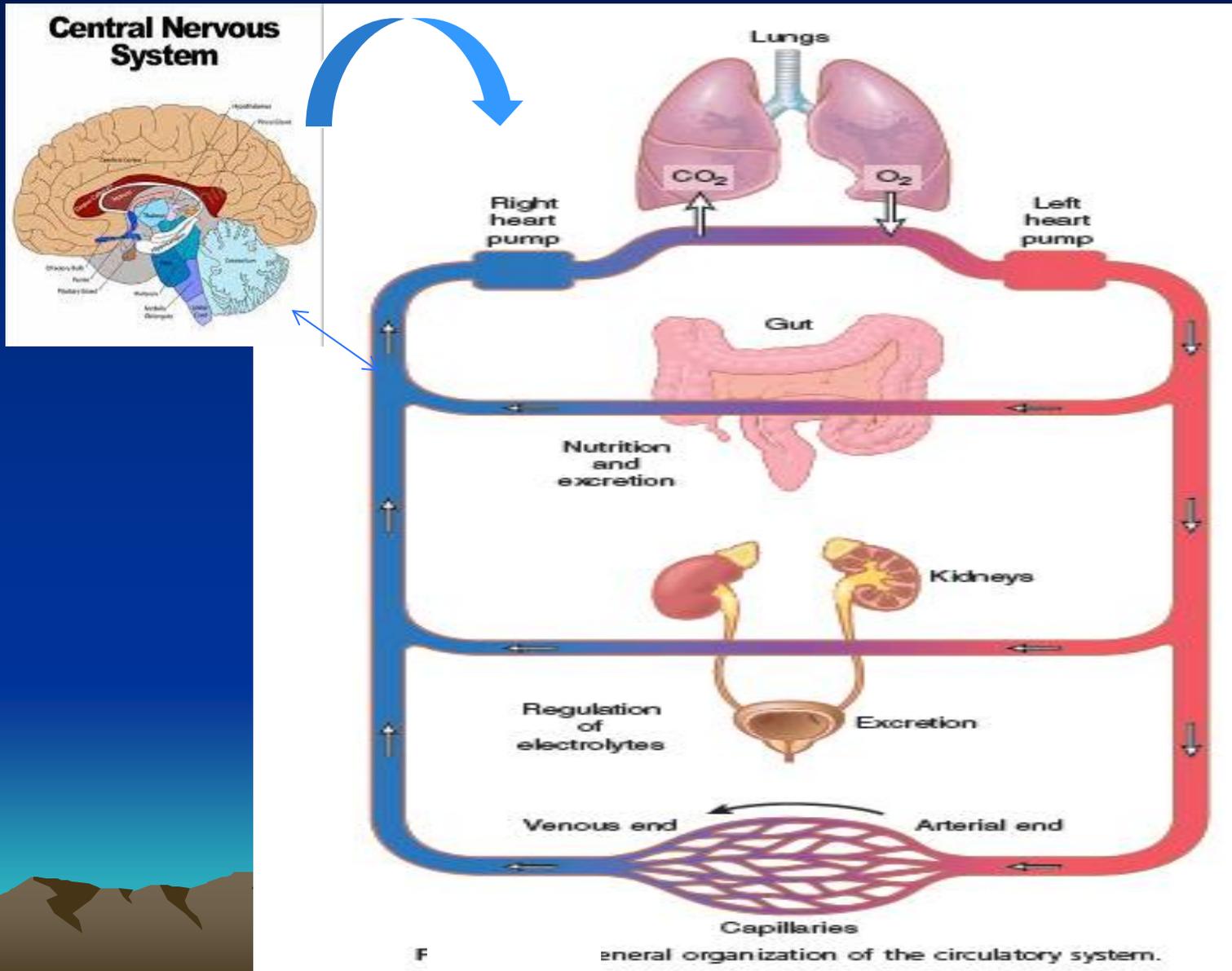
Urinary System



CELLS ARE THE LIVING UNITS OF THE BODY

- The basic living unit of the body is **the cell**. Each **organ** is an aggregate of many different cells held together by intercellular supporting structures.
- Each type of cell is specially adapted to perform one or more **functions**.
- For instance, the **Red blood cells (RBCs)**, numbering about 25 trillion in each human being, transport oxygen from the lungs to the tissues. Although the RBCs are the most abundant of any single type of cell in the body, about 75 trillion additional cells of other types perform functions different from those of RBCs.

The integration between systems of the body



Thank You

