

# Lec2 \ Introduction to Physiology The Human Body



*Msc. Sarah Raheem*

# **Introduction**

**1- physiology** The word physiology is from the Ancient Greek, and it is the study of how organisms perform their vital functions. An example is the study of how a muscle contracts or the force contracting muscles exert on the skeleton. Physiology is built upon a tripod of sciences: physics, chemistry, and anatomy.

**2-Human physiology** is the study of the mechanical, physical, and biochemical processes that support the body's function.

# *Introduction*

## **3- Approximately 60% of the human body is fluid**

- **Two thirds of the fluid is retained within cells – *Intracellular***
- **Intracellular fluid contains large amounts of potassium, magnesium, and phosphate ions.**
- **One third of the fluid is outside cells – *Extracellular***
- **Extracellular fluid contains large amounts of sodium, chloride, and bicarbonate ions as well as nutrients including oxygen, glucose, fatty acids, and amino acids.**

# **Introduction**

## **Types of human physiology**

**Human physiology is the study of functions of the human body that can be divided into the following types:.**

### **1 Cell physiology**

**it is the study of the functions of cells.**

### **2 Special physiology**

**This is the study of the functions of special organs. For example, renal physiology is the study of kidney function.**

### **3 Systemic physiology**

**It includes all aspects of the function of the body systems, such as cardiovascular physiology, respiratory physiology, reproductive physiology etc..**

### **4 Pathophysiology**

**It is the study of the effects of diseases on organ or system functions .**

# *Introduction*

## *Level of organization*

### **Different levels of organization**

**a. Atom: An atom is the smallest particle of an element [carbon (C), Hydrogen (H), Oxygen (O), etc.].**

**b. Molecule: A molecule is a particle composed of two or more joined atoms (carbon dioxide CO<sub>2</sub>, water H<sub>2</sub>O).**

**C- Macromolecule: A macromolecule is a large molecule (carbohydrates, lipids, proteins, nucleic acids).**

# *Definations*

**Organelles: An organelle is a small organ of a cell, which performs a particular function (cell membrane, cytoplasm and nucleus)**

**1 Cell: The cell is the basic unit of structure and function of living organisms.**

**2 Tissue: A tissue is a group of similar cells that performs a specialized function (epithelia, connective, muscle and nervous).**

**3 Organ: An organ is a structure consisting of a group of tissues that perform a specialized function (skin, heart, brain, etc...).**

**4 System: A system is a group of organs that act together to perform a specialized function. a. cardiovascular system, b. respiratory system, c. urinary system, d. digestive system, e. nervous system, f. respiratory system, g. endocrine system, h. musculoskeletal system, i. integument system.**

**5 Human body: A living organism is the most complex level of organization. It consists of all the systems.**

# *Introduction*

## *The seven characteristics of life*

- 1 Cell: All living organisms have cells; cells are the building blocks of life.**
- 2 Metabolism: All living organisms eat, drink, breathe and excrete.**
- 3 Growth: All living organisms take in material from the environment to enlarge and sustain.**
- 4 Reproduction: All living organisms are able to produce a copy of themselves.**
- 5 Irritability: All living organisms are able to react to a change in their environment.**
- 6 Adaptation: All living organisms are able to compete with each other for food and space to survive.**
- 7 Movement: All living organisms are able to move.**



*The End*