

# **Lectures of Medical biology**

## **A- Molecular Cell biology**

- 1-** Introduction to cell biology, Types of cell, cell theories.
- 2-** Living status of the cell, living properties of the protoplasm, and General structure of a cell.
- 3-** Chemistry of the cell (inorganic & organic molecules).
- 4-** The organic materials of the cell  
Proteins, Lipid, Carbohydrates, and Nucleic acids.
- 5-** Molecular organization of plasma membrane & functions.
- 6-** Modification of the plasma membrane.
- 7-** Molecules crossing the plasma membrane.
- 8-** Structure and functions of cytoplasmic organelles (ribosome, endoplasmic reticulum, Golgi complex, mitochondria, lysosome, peroxisomes, centrioles, cilia and flagella).
- 9-** Cytoplasm (cytoskeleton, cytosol and cytoplasmic inclusions).
- 10-** Structure and functions of the nucleus (nucleolus, nuclear membrane, chromatin and nucleoplasm).
- 11-** Cell cycle and cell division.
- 12-** Gametogenesis
- 13-** Cellular energy.
- 14-** Cellular activity

**15-** Cellular differentiation.

**16-** Cellular specialization.

**17-** Cellular aging.

**B- Molecular genetics**

**1-** Genetic terminology.

**2-** Mendel's 1<sup>st</sup> law and 2<sup>nd</sup> law.

**3-** Mode of Mendelian inheritance.

**4-** Deviation from Mendelian laws.

**5-** Linkage and sex-linked inheritance

**6-** Molecular basis of crossing over

**7-** Human chromosomes

**8-** Numerical aberrations

**9-** Structural aberrations

**10-** DNA structure and replication

**11-** RNA structure and translocation

**12-** Protein synthesis and gene regulation

**13-** Mutation and its molecular basis

**14-** Genetic control of metabolism and Gene expression

- 15- Genetic engineering and biotechnology**
- 16- Recombinant DNA technology**
- 17- Gene cloning**
- 18- Medical application of genetic engineering**

## **C- Basic histology**

- 1- Introduction**
- 2- Epithelial tissue**
- 3- Classification of epithelial tissue**
- 4- Glandular epithelium**
- 5- Cell junctions**
- 6- Connective tissue**
- 7- Classification of connective tissue**
- 8- Blood tissue**
- 9- Cartilage**
- 10- Bone tissue**
- 11- Development and growth of bone**
- 12- Muscle tissue**
- 13- Regeneration of muscle tissue**

**14-** Nervous tissue

**15-** Synapses