

Medical Biology

By

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Lecture -1

Introduction



- 1. Macromolecules: Nucleic acids**
- 2. DNA**
- 3. RNA**
- 4. Protein**
- 5. Functions of Protein**

Lecture -2

Molecular Biology



- 1. Central Dogma**
- 2. Main Process of Molecular Biology**
- 3. Replication**
- 4. Steps of Replication**
- 5. Transcription**
- 6. Steps of Transcription**
- 7. Translation**
- 8. Steps of Translation**

Lecture -3

PCR (Polymerase Chain reaction)



- 1. Principle of PCR**
- 2. Requirements**
- 3. Facts**
- 4. Procedure steps**
- 5. Applications**

Lecture -4

Genetic Engineering



- 1. Definition**
- 2. Process of genetic engineering**
- 3. Applications**

Lecture -5

Genetically Modified foods (GMF)



- 1. Aim**
- 2. Applications**
- 3. Ethics**
- 4. Methods**
- 5. GM plants**
- 6. GM Animals**

Lecture -6

Cytogenesis



- 1. Field of study**
- 2. Cytogenesis Technologies**
- 3. Cytogenesis diseases.**
- 4. Absence of chromosomes or genes**
 - **Turner syndrome**
 - **DiGeorge syndrome**
- 5. Increase number of chromosome**
 - **Down syndrome.**
 - **Klinefelter's syndrome (XXY syndrome)**

Lecture -7

Gene Therapy



- 1. Types of Gene Therapy**
- 2. Vectors in gene therapy.**
- 3. Viruses: Retroviruses**
- 4. Adenoviruses**
- 5. Envelope protein pseudotyping of viral vectors**
- 6. Herpes Simplex Virus**
- 7. Non-viral methods**
- 8. Physical Methods**
- 9. Chemical Methods**
- 10. Hybrid methods**
- 11. Problems**

Lecture -8

Biotechnology



- 1. Branches of Biotechnology**
- 2. Applications:**
- 3. Medicine**
- 4. Agriculture**
- 5. Industrial**
- 6. Bioremediation and biodegradation**

Lecture -9

Nanotechnology



- 1. Approaches:**
- 2. Larger to smaller (Nanomaterials).**
- 3. Applications of Larger to smaller .**
- 4. Simple to complex (Bottom-up approaches).**
- 5. Applications of Simple to complex .**
- 6. Molecular Nanotechnology.**
- 7. Tools of Nanotechnology.**
- 8. Products by Nanot.**

Lecture – 10

Nanotechnology and Biology



- 1. Bionanotechnology.**
- 2. Nanobiotechnology.**
- 3. Concepts**
- 4. Applications.**
- 5. Implications.**

Lecture – 11

Bioinformatics



- 1. Aims**
- 2. Applications**
- 3. Principles**
- 4. Major Research Areas**
- 5. Approaches**