



CATEDRA UNIVERSITARĂ GENETICĂ MEDICALĂ
PROFESOR UNIVERSITAR POZIȚIA 39 DIN STATUL DE FUNCȚII

Thematic

- Role of genetics in medicine. History of genetics.
- Classification of genetic disorders.
- Study levels in medical genetics. Topology of DNA structure. The organization and functionality of genomic DNA. DNA replication.
- Gene – fundamental morphologic and functional element of heredity. Gene structure in eukaryotes.
- Chromosomal theory of heredity. Topology of RNA structure. Transcription. Translation. Genetic code. Central dogma of molecular biology.
- Multiple alleles. Types of genes.
- Epigenetic mechanisms involved in gene expression.
- Organization of human genome.
- Genetic basis of protein synthesis. Gene-protein relationship.
- The human gene map. DNA Packaging: Nucleosomes and Chromatin. Control mechanisms of gene expression and differentiation.
- Genetic recombination. Mutations: definition, classification, molecular bases, mutagens. DNA lesions repair mechanisms.
- Mendel's laws. Mendelian inheritance. Mechanisms of gene expression in single-gene inheritance. Genetic heterogeneity. Autosomal inheritance. X-linked inheritance. Holandric inheritance.
- Non-classical patterns of inheritance. Particularities of single-gene inheritance. Multifactorial inheritance. Genetics of disorders with multifactorial inheritance. Twins and twinning.
- Chromosomes - cytogenetic basis of inheritance.
- DNA Packaging: Nucleosomes and Chromatin.
- Clinical cytogenetics.
- Cytogenetic abnormalities of the autosomes and the sex chromosomes.
- Syndromes with microdeletions and microduplications. Genetic basis for sex determination. Disorders of sexual development. Genetic causes of reproductive failure.
- The molecular basis of genetic diseases. Nutrigenetics. Pharmacogenetics.
- Genetics of Human Major Histocompatibility Complex. Genetics of the immune system.
- Genetic basis of cancer. Chromosomal abnormalities in hematological malignancies.
- Elements of teratology.



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- Strategies for the treatment of genetic disorders.
- Genetics and rare diseases.
- Bioethics in genetics.
- Elements of epigenetics.

References

1. Genetică Medicală: Mircea Covic, Dragos Stefanescu, Ionel Sandovici, Vlad Gorduza. Editura Polirom, 2017
2. Genetică Medicală: Thompson&Thompson, ediția în limba română, Ed. Hipocrate, 2018
3. New Clinical Genetics, Andrew Read, Dian Donnai. Scion Publ. Ltd, 2015