



The modern concept of the DNA structure and regulation

Mikhail I. Zarayskiy

Department Clinical Laboratory Diagnostics
First Pavlov State Medical University of Saint Petersburg, Russia

During the lecture will be discussed issues concerning:

Structure of DNA:

- historical aspects (Mendel, de Vries, Correns, Miescher, Morgan, Boveri etc.),
- study of the DNA structure (Chargaff, Wilkins, Franklin, Watson, Francis Crick),
- study of gene structure,
- characteristics of the structure of DNA and the genome

Genetic factors regulating DNA:

- priming,
- allele polymorphism,
- methylation,
- hydroxymethylation, enhancers,
- silencers and insulators,
- differentiating methylated region,
- imprinting control region,
- DNA-recombination,
- fusion genes,
- transposons

Epigenetic factors for the DNA regulation:

- Histone modification,
- miRNA

Posttranscriptional regulation:

- splicing (variants),
- synchronization of the gene expression

Mutual regulation of genes in the gene IGF2 (example)