

# Portal: Biology and Genetics



## Biology and Genetics

### Useful links

#### Examination

- Exam Topics in Biology and Medical Genetics (1. LF UK, GM)
- Exam Topics in Biology and Medical Genetics (1. LF, D)

#### Links

- All articles in Category Genetics
- Commented internet links
- Commented list of recommended study literature

#### Institutes

- Institute of Biology and Department of Medical Genetics, 1<sup>st</sup> Faculty of Medicine, Charles University, Prague (<https://ublg.lf1.cuni.cz/en>)
- Department of Biology and Medical Genetics, 2<sup>nd</sup> Faculty of Medicine, Charles University, Prague (<https://www.lf2.cuni.cz/en/departments-biology-and-medical-genetics>)
- Department of General Biology and Genetics, 3<sup>rd</sup> Faculty of Medicine, Charles University, Prague (<https://www.lf3.cuni.cz/en/departments/biologie-genetika/index.html>)

### Biology and Genetics

#### Fundamental Genetics

- Genome
- Locus
- Phenocopy • Genocopy
- Genomic Imprinting
- Description of the Chromosome • Chromosome Number and Structure
- Laws of Inheritance
- Extrachromosomal and Non-Mendelian Inheritance
- Genetic Linkage
- Heritability
- Pleiotropy
- Backcross
- Hemizygote • Heterozygote • Homozygote
- Haploid • Diploid
- Haplotype

#### Molecular Genetics

- Gene Mutations
- DNA Repair • Mutagenesis and DNA Repair
- Protein Polymorphism
- Eukaryotic Chromosomes
- PCR
- Blotting Methods
- Comparative Genomic Hybridisation
- Genetic Code
- DNA Repair Mechanisms and their Disturbances

#### Prokaryotes

- DNA Replication
- Structure and Function of Prokaryotes • Prokaryotic Chromosomes • Gene Expression in Prokaryotes
- Archaea

#### Cytogenetics

- Karyotype
- Chromosome abnormalities • Etiology of

#### Cell Cycle

- The Cell Cycle
- Meiosis
- Mitosis
- Gametogenesis

#### Clinical Genetics

- Gene Therapy • Vectors
- Protooncogenes • Tumor Suppressor Genes
- Cancer Families

#### Diagnostic Methods

- Prenatal Diagnosis of Chromosome Abnormalities
- DNA Diagnostic Direct Methods
- DNA Diagnostic Indirect Methods
- Indications for Chromosome Analysis
- Genetic Linkage Analysis
- Genetic Counseling
- Population Screening
- Cordocentesis • Chorionic Villus Sampling

#### Autosomal Disorders

- Leiden Mutation
- Beckwith-Wiedemann Syndrome
- Cystic Fibrosis
- Sickle Cell Anemia

#### Gonosomal Disorders

- Fragile X Syndrome

#### Chromosomal Abnormalities

- Disorders of the Sex Chromosomes
- Down Syndrome
- Patau Syndrome
- Klinefelter Syndrome
- Turner Syndrome

- Chromosome Abnormalities • Inversion • Isochromosomes • Crossing-over • Deletion • Translocation
- Cell and Tissue in vitro Cultivation

### Human Genetics

- Transplantation
- Twins and Twin Studies
- Family Studies, Pedigree Analysis

### Environmental Genetics

- Genotoxic Substances

### Ecology and Genetics

- Nutrigenetics

### Immunogenetics

- Major Histocompatibility Complex

### Microdeletion Syndromes

- Angelman Syndrome
- Prader-Willi Syndrome

- Genotype Variation, Mutations and Recombination
- Multifactorial Inheritance, Heritability • Multifactorial Inheritance
- Polygenic Inheritance

### Other genetic diseases

- Osteogenesis Imperfecta

### Population and Evolutionary Genetics

- Population
- Genetic Drift
- Coefficient of Inbreeding • Coefficient of Relatedness
- Selection

### Experimental Genetics

- Genetic Mapping • HUGO
- Gene Manipulation
- Cloning
- Congenetic Strain • Consomic Strain
- Recombinant DNA