



Biology and human genetics 1 – Dentistry - winter semester academic year 2026/2027

Lectures:

1.	Introduction to medical biology. Functional organization of prokaryotic and eukaryotic cells. Biogenesis and function of cells under physiological and pathological conditions. Molecules in cells and organisms.	18.09.2026	prof. Danišovič
2.	Function of organelles in the cell and mutual interactions. Biomembranes, transport of substances and intercellular communication. Receptors.	25.09.2026	prof. Danišovič
3.	Cell reproduction (mitosis, amitosis, meiosis)	02.10.2026	prof. Danišovič
4.	Introduction to molecular genetics. Composition, structure, function and conformational types of DNA. Replication of prokaryotic DNA.	09.10.2026	Dr. Klimová
5.	Eukaryotic DNA replication. Genetic code. Gene structure. Transcription. Post-transcriptional editing of pre-mRNA.	16.10.2026	Dr. Priščáková
6.	Types, structure, synthesis and function of RNA (tRNA, rRNA, snRNA, snoRNA, miRNA). Translation. Post-translational modification of proteins.	23.10.2026	Dr. Petrovič
7.	Forms of entry and existence of foreign DNA in the cell. Vectors. The principle of recombination techniques.	30.10.2026	Dr. Pastoráková
8.	Gene expression. Epigenetics, alternative use of genetic information, mechanisms of differentiation.	06.11.2026	Dr. Priščáková
9.	Cell death (apoptosis, autophagy, necrosis).	13.11.2026	assoc. prof. Böhmer
10.	Oral microbiome and selected oral infections (protein synthesis and replication mechanisms, cell invasion. Molecular genetics of bacteria and viruses. Recombination techniques.	20.11.2026	assoc. prof. Gbelcová
11.	Viruses - characteristics, reproduction, genomes, mutations and recombination.	27.11.2026	assoc. prof. Gbelcová
12.	Selected viral diseases.	04.12.2026	assoc. prof. Gbelcová

Practical trainings:

1.	Introduction to practical training. Basics of microscopy.	24.09.2026	appointed teachers
2.	Native and fixed preparations from different cell types. Osmosis and the cell.	01.10.2026	appointed teachers
3.	Cell reproduction. <i>In vitro</i> cell cultivation.	08.10.2026	appointed teachers
4.	Collection, preparation, and handling of biological samples. Laboratory equipment for DNA analysis. DNA and RNA isolation.	15.10.2026	appointed teachers
5.	Genetic code. Gel electrophoresis, use of restriction enzymes.	22.10.2026	appointed teachers
6.	Basic methods of DNA analysis.	29.10.2026	appointed teachers
7.	Omics. Using molecular biology methods in practice – seminar.	05.11.2026	appointed teachers
8.	Selected case studies.	12.11.2026	appointed teachers
9.	Evaluation of basic biological properties of cells. Methods for detecting cell death.	19.11.2026	appointed teachers
10.	Microscopic and genetic techniques for studying and diagnosing infections and antibiotic resistance.	26.11.2026	appointed teachers
11.	Credit test.	03.12.2026	appointed teachers
12.	Overview of the most important knowledge – interactive seminar.	10.12.2026	appointed teachers