

Level: PhD				
Course title: Cell culture as a model system for testing the biological activity of potential therapeutics (DSB624)				
Status: elective				
ECTS: 15				
Requirements:				
Learning objectives The goal of this course is to acquire knowledge about the possibilities of the application of cell model systems, and the ability of science-based interpretation of experimental data in the field of in vitro biological activity testing of potential therapeutics.				
Learning outcomes After successfully completing the course, students should know how to use the methods and techniques necessary to perform in vitro tests on cell cultures as a model system, and to know how to independently perform experiments and discuss the results. They should have the ability of critical analysis of scientific papers, scientific hypotheses and experimental results.				
Syllabus <i>Theoretical instruction</i> Laboratory work with cell cultures: equipment, aseptic technique, biologically hazardous material. Maintenance of cell lines: growth medium for cells in culture. Biology of cell cultures, primary and continuous cell lines. 2D and 3D cell culture. Principles of cloning and selection of specific cell types. Physical methods for the separation of cells. Quantification and characterization of cell growth. In vitro tests with cell cultures: measurement of cell viability, anti-proliferative and cytotoxic activity, determination of apoptosis and cell cycle phases, identification of proteins characteristic for signalling pathways by modern molecular methods, the use of cell cultures for the assessment of genotoxic effects; Characterization of new cell lines. Stem cells, cancer stem cells, induced pluripotent stem cells (IPS).				
Weekly teaching load				Other:
Lectures: 5	Exercises: 5	Other forms of teaching:	Student research:	