

<b>Level:</b> bachelor				
<b>Course title:</b> MECHANISMS OF CELL COMMUNICATIONS				
<b>Status:</b> elective				
<b>ECTS:</b> 6				
<b>Requirements:</b> none				
<b>Learning objectives</b> To enable students to understand and learn the basic terms and principles of the communications between the cells and their environment, as well as the molecules and signalling transduction pathways involved in the transfers of the information in the cells till ultimate effectors systems.				
<b>Learning outcomes</b> Students will be able to understand and describe the basic principles in the cellular communication realized via chemical signalling. In addition, students will be able to describe characteristics of intracellular signalling pathways and ways of formation of networks for detection, transduction, transmission, propagation and amplification of the information in order to realized adequate biological response of the cell.				
<b>Syllabus</b> <i>Theoretical instruction</i> Overview of different ways of cellular communications and basic signalling transduction pathways. Receptors and signalling pathways connected with trimeric G-proteins ( <u>G-Proteins Coupled Receptors</u> – GPCRs). Receptors enzymes and receptors connected with enzymes. Receptors and signaling pathways involving proteolysis. Intracellular receptors. Functional organization of the proteins in membranes and their translocation. Basic signalling pathways in apoptosis.  <i>Practical instruction</i> Analysis of NO-cGMP signalling pathway will be used to present and learn basic methodological approach(s) required for studying communications between the cells. This will include: RT-PCR; Western blot; stimulation/inhibition of the signalling pathways elements; up (over-expression) and/or down regulation (siRNA, dsRNA, anti-sense) of the signalling pathway element(s); analysis of phosphorylation of the signalling pathway element(s).  <i>Seminars</i> Short presentation of the specified topics connected to a student's Master thesis.				
<b>Weekly teaching load</b>				Other:
Lectures: 2	Exercises:	Other forms of teaching: 4	Student research:	