Level: PhD

Course title: Stereochemistry of Monosaccharides (DSB604)

Status: elective

ECTS: 15

Requirements: none

Learning objectives

Acquisition of advanced knowledge about the three-dimensional structure of monosaccharides and their derivatives of biological significance.

Learning outcomes

Acquainting of modern scientific achievements in the stereochemistry of monosaccharides will help the student to understand and explain their reactivity, as well as their chemical behaviour in biological conditions.

Syllabus

Theoretical instruction

Presentation of three-dimensional structures of monosaccharides and derivatives. Absolute and relative configuration. Conformational analysis of acyclic derivatives of monosaccharides. Three-dimensional structure of the cyclic derivatives. Conformations of the six-membered rings. Conformations of the five-membered rings and pseudorotation. Conformations of the seven-membered rings. Conformations of fused rings. The influence of steric factors on chemical and biological behaviour of monosaccharides and derivatives. The anomeric and exo-anomeric effects.

Practical instruction

Nomenclature of carbohydrates and derivatives. 3D visualization and animation of carbohydrates of biological significance.

Weekly teaching load				Other:
Lectures: 5	Exercises:	Other forms of teaching:	Student research: 5	