

**4. Oct. 5 Install applications on Your computer: Raswin2.6, ISIS Draw4, ChemScape, FireFo x3.5.5, Mage**  
<http://aris.gusc.lv/index.html>; For Windows in adress: <http://aris.gusc.lv/InstallChemistryPC.html> and  
 MacOSX MacBook Virtual Box: <http://aris.gusc.lv/InstallChemistryMac.html> runing Windows 10  
**Install applications Raswin2.6, ISIS Draw4, ChemScape, FireFox3.5.5, Mage** <http://aris.gusc.lv/Inst170712.pdf>  
 Computer preparation for molecules experimental research. Instalation.  
**Medical BioChemistry** data base **htdocs** building and structure.  
 Computer and FireFox3.5.5 configuration for molecular coordinates experimental research.

**Nr. Week Lectures** (October 4–October 25) room A410 , 15:30-17:00 (4\*2\*45 minutes)

2.	11. Okt	<a href="http://aris.gusc.lv/ChemFiles/Aquaporins/WCPsAOPsIUBMBLife09/AOP1-11.pdf">http://aris.gusc.lv/ChemFiles/Aquaporins/WCPsAOPsIUBMBLife09/AOP1-11.pdf</a> ; <b>Aquaporins</b> cell membranes crossing <b>H<sub>2</sub>O</b> , <b>O<sub>2</sub></b> , <b>NO</b> transport proteins. The osmosis against osmolar concentration gradient: <a href="http://aris.gusc.lv/ChemFiles/AquaPorin1-0.htm">AquaPorin1-0.htm</a> ; in human body.task: <a href="/Research/Aquaporine0.pdf">/Research/Aquaporine0.pdf</a> ;
3.	18. Okt	<b>Carbonic Anhydrase CA ENZYME</b> <a href="http://aris.gusc.lv/ChemFiles/CA/CAnhydraseII.htm">http://aris.gusc.lv/ChemFiles/CA/CAnhydraseII.htm</a> physiological pH=7.36 determinant in blood:: <a href="http://aris.gusc.lv/06Daugavpils/Research/CA.pdf">http://aris.gusc.lv/06Daugavpils/Research/CA.pdf</a>
4.	25. Okt	<b>O<sub>2</sub></b> , H <sup>+</sup> , HCO <sub>3</sub> <sup>-</sup> shuttles Hemoglobin, Myoglobin molecules. Triplet <b>••O≡:::≡O••</b> oxygen. <a href="http://aris.gusc.lv/06Daugavpils/Research/HromoProteinsA.pdf">http://aris.gusc.lv/06Daugavpils/Research/HromoProteinsA.pdf</a> ; <a href="http://aris.gusc.lv/ChemFiles/hemoglobEricMarzUMas/INDEX.htm">http://aris.gusc.lv/ChemFiles/hemoglobEricMarzUMas/INDEX.htm</a> oxygen <b>O<sub>2</sub></b> and carbon dioxide <b>CO<sub>2</sub></b> exchange ENZYMES in human organism Hemoglobin, CA:

Practical class topic at room Nr A410 (3\*45 min class) XXXday 16<sup>15</sup>÷18<sup>30</sup>,

1.	1. Nov	Tyr357-Heme coordinated iron(III) CATALASE <b>HOMEOSTASIS</b> activity E <sub>a</sub> in human organism geometric factor <b>A=0,13</b> : <a href="http://aris.gusc.lv/06Daugavpils/Research/CATALASE.pdf">http://aris.gusc.lv/06Daugavpils/Research/CATALASE.pdf</a> <a href="http://aris.gusc.lv/ChemFiles/catalaseKenyon/cat1.htm">http://aris.gusc.lv/ChemFiles/catalaseKenyon/cat1.htm</a>
2.	8. Nov	Cyclo oxygenase: <a href="/Research/COX.pdf">/Research/COX.pdf</a> : Singlet <b>••O•-•O••</b> oxygen Eicosatetraenoic acid <a href="http://aris.gusc.lv/06Daugavpils/Research/COXLab14.pdf">http://aris.gusc.lv/06Daugavpils/Research/COXLab14.pdf</a> ; source of: <b>prostaglandins PGs</b> , <b>prostacyclins PGI<sub>2</sub></b> , <b>thromboxanes TXs</b> and <b>leukotrienes LTs</b> inhibitors: aspirin, warfarin, tylenol, paracetamol, ibuprofen: <a href="http://aris.gusc.lv/ChemFiles/CycloOxygenase/cycox.html">http://aris.gusc.lv/ChemFiles/CycloOxygenase/cycox.html</a>
3.	15. Nov	<a href="/Research/NADalcoholDeHydr.pdf">/Research/NADalcoholDeHydr.pdf</a> : ENZYME <b>alcohol dehydrogenase ADH</b> . B3 vitamin tunneling hydride ion <b>H<sup>-</sup></b> dissociates proton <b>H<sup>+</sup></b> : <a href="http://aris.gusc.lv/ChemFiles/AlhoDeHydrogenase/NadDehydrogenase.htm">http://aris.gusc.lv/ChemFiles/AlhoDeHydrogenase/NadDehydrogenase.htm</a>
4.	22. Nov	<a href="/Research/PhosphLipidBilayerMembranB.doc">/Research/PhosphLipidBilayerMembranB.doc</a> Cell <b>membrane</b> structure of human physiology: <a href="http://aris.gusc.lv/ChemFiles/BilipidCholine/Membrane/Membrane/membrane/Membrane.html">http://aris.gusc.lv/ChemFiles/BilipidCholine/Membrane/Membrane/membrane/Membrane.html</a> Cholesterol 0,9÷1/1 phospholipid ratio in human erythrocytes: <a href="/Research/LipdBiLayerMembran.doc">/Research/LipdBiLayerMembran.doc</a> <a href="http://aris.gusc.lv/ChemFiles/BilipidCholine/Membrane/Cholest5ene3-20diol/Cholesterol5Membran.html">http://aris.gusc.lv/ChemFiles/BilipidCholine/Membrane/Cholest5ene3-20diol/Cholesterol5Membran.html</a> START-STARTD1-13: <a href="http://aris.gusc.lv/06Daugavpils/Research/Start.doc">http://aris.gusc.lv/06Daugavpils/Research/Start.doc</a> : <a href="http://aris.gusc.lv/ChemFiles/START/START.htm">http://aris.gusc.lv/ChemFiles/START/START.htm</a>
5.	29. Nov	<a href="http://aris.gusc.lv/06Daugavpils/Research/HSA.doc">http://aris.gusc.lv/06Daugavpils/Research/HSA.doc</a> Human serum albumin <b>HSA HOMEOSTASIS</b> physiology research with Medical Chemistry. Load in <b>HSA</b> water insoluble 7 fatty acids, Hem, bilirubin, aspirin, warfarin, ibuprofen, indometacin: <a href="http://aris.gusc.lv/ChemFiles/Albumin/cycox.html">http://aris.gusc.lv/ChemFiles/Albumin/cycox.html</a>
6.	8. Dec	<a href="http://aris.gusc.lv/06Daugavpils/Research/AndrogenReceptor.doc">http://aris.gusc.lv/06Daugavpils/Research/AndrogenReceptor.doc</a> androgen nuclear receptor: <a href="http://aris.gusc.lv/ChemFiles/BilipidCholine/Membrane/AndrogenReceptor/Androgen1.htm">http://aris.gusc.lv/ChemFiles/BilipidCholine/Membrane/AndrogenReceptor/Androgen1.htm</a> <a href="http://aris.gusc.lv/ChemFiles/BilipidCholine/Membrane/MineraloCorticoidReceptor/NR-A-G-P-R2AA2.htm">http://aris.gusc.lv/ChemFiles/BilipidCholine/Membrane/MineraloCorticoidReceptor/NR-A-G-P-R2AA2.htm</a> Mineral corticoid receptors: <a href="http://aris.gusc.lv/06Daugavpils/Research/MinerCorticoidAldosteron.pdf">http://aris.gusc.lv/06Daugavpils/Research/MinerCorticoidAldosteron.pdf</a>
7.	13. Janv	Genom <b>HOMEOSTASIS</b> instruments DNA methyl transferases: DNMT1HhaI; DNMT3GC ≡CG <a href="http://aris.gusc.lv/ChemFiles/hhaiDNAMethylCtransferKeny/C5MethTransferGoodSell11/MethylTrans11.doc">http://aris.gusc.lv/ChemFiles/hhaiDNAMethylCtransferKeny/C5MethTransferGoodSell11/MethylTrans11.doc</a> Methylation Protein <b>DNMT3</b> experimental research task: <a href="/Research/DNAMethylTransferase.doc">/Research/DNAMethylTransferase.doc</a> ; <b>Zn<sup>2+</sup></b> ions DNA Medical Chemistry zinc finger motifs on DNA strands: <a href="/hhaiDNAMethylCtransferKeny/methmast.htm">/hhaiDNAMethylCtransferKeny/methmast.htm</a>
8.	10. Jan	<a href="http://aris.gusc.lv/ChemFiles/Aquaporins/AquaPorin1.htm">http://aris.gusc.lv/ChemFiles/Aquaporins/AquaPorin1.htm</a> <b>Aquaporins</b> cell membranes crossing <b>H<sub>2</sub>O</b> , <b>O<sub>2</sub></b> , <b>NO</b> transport proteins. The osmosis against osmolar concentration gradient in human body.task: <a href="/Research/Aquaporine0.pdf">/Research/Aquaporine0.pdf</a> ; <a href="/Research/Aquaporine1.pdf">/Research/Aquaporine1.pdf</a>

RSU dep. Human Physiology and Biochemistry - Assistant Professor, Āris Kaksis.

**Literature :** <http://aris.gusc.lv/2023MFArzRudensBkurs.pdf>; 2023 2023. gada 36 publicatīss.

1. Ā.Kaksis RSU 2023: [http://aris.gusc.lv/BioThermodynamics/Data\\_bookSpring2015CTL.pdf](http://aris.gusc.lv/BioThermodynamics/Data_bookSpring2015CTL.pdf)
2. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/ColigatConcOsmosOxRedL.pdf>
3. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/ColigativePropertiesL.pdf>
4. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/OxRedBiologicalW.doc>
5. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/ElektrodsM.doc>
6. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/MembraneElektrodsLat.pdf>
7. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/ThermEquilibrKinEnzL.pdf>
8. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/BioThermodynamics.pdf>
9. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/BioThermodynamicAttractor7-36L.pdf>
10. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/KineticsLat.pdf>
11. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/74LidzsvarsDaba.pdf>
12. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/H2OBufCO2L.pdf>
13. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/H2ODissociationLat.pdf>
14. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/BufferSolutionLat202315.pdf>
15. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/AtomBondMolForceL.pdf>
16. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/34AtomaUzbuveS.pdf>
17. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/CrystalloGraphyL.pdf>
18. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/4KimiskaSaite.pdf>
19. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/4Kompleksi.pdf>
20. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/4HydrogenBondL.pdf>
21. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/NutritionBioChem/38Olalt10311.pdf>
22. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/NutritionBioChem/32ProteinsLatC.pdf>
23. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/CarbohydratesProteinsL.pdf>
24. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/Lipidi.pdf>
25. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/06Daugavpils/Research/LipdBiLayerMembLat.pdf>
26. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/LipCholestFatSACL.pdf>
27. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/NutritionBioChem/35Ogl45Hidr150211.pdf>
28. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/NutritionBioChem/12CarbohydratesDisacchari.pdf>
29. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/NutritionBioChem/38Olalt10311.pdf>
30. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/NutritionBioChem/32ProteinsLatC.pdf>
31. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/ChemFiles/FatAcLiverProt11/1/FABP8myp2PMP2.pdf>
32. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/06Daugavpils/Research/HsAsLat.pdf>
33. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/DNAproteinRNALS.pdf>
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35. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/NutritionBioChem/39NuklSk310311.pdf>
36. Ā.Kaksis RSU 2023: <http://aris.gusc.lv/BioThermodynamics/FABPlipocalinsS.pdf>
37. Biochemie des Menschen. Horn F, ed. 8., 2020. doi:10.1055/b000000082