


**Researcher profile (portfolio) form for potential research supervisors of postgraduate track participants in the Global Universities Association International Olympiad for graduate and postgraduate applicants.**

University	Tomsk polytechnic university
English language proficiency	C1
Applicant's postgraduate program	Organic chemistry
List of research projects of a potential research supervisor (participation/leadership) List of possible research topics	<ul style="list-style-type: none"> <li>• Photochemical C-H modification of polyhydroxylated compounds</li> <li>• Synthesis of antiviral drugs based on uronic acid disaccharides</li> <li>• Total synthesis of natural low molecular weight plant metabolites with carbohydrate motifs</li> <li>• New materials based on cyclodextrins and polysaccharides</li> </ul>
 <p>Research supervisor: Elena V. Stepanova, Candidate of Science in organic chemistry (TPU, 2014)</p>	Chemical sciences
	Supervisor's research interests
	Carbohydrate chemistry
	Total synthesis
	Protective groups in carbohydrates
	Research highlights (if applicable):
	<ul style="list-style-type: none"> <li>• Cooperation with the Institute of Organic Chemistry (IOC RAS, Moscow) and the Royal Institute of Technology (KTH, Stockholm): long business trips/internships are possible</li> <li>• Employment under programs and grants (researcher engineer with the possibility of transfer to junior researcher)</li> </ul>
Supervisor's specific requirements:	
<ul style="list-style-type: none"> <li>• Basics of organic synthesis</li> <li>• NMR spectroscopy</li> <li>• Laboratory skills (safe work in the lab of organic chemistry)</li> <li>• High motivation</li> </ul>	
Supervisor's main publications	
<ul style="list-style-type: none"> <li>• Shatskiy A, <b>Stepanova EV</b>, Kärkäs MD. Exploiting photoredox catalysis for carbohydrate modification through C–H and C–C bond activation Nature Reviews Chemistry. 2022; DOI: 10.1038/s41570-022-00422-5</li> <li>• Shatskiy A, Axelsson A, <b>Stepanova EV</b>, Liu JQ, Temerdashev AZ, Kore BP, Blomkvist B, Gardner JM, Dinér P, Kärkäs MD. Stereoselective synthesis of unnatural <math>\alpha</math>-amino acid derivatives through photoredox catalysis. Chemical science. 2021;12(15):5430-7.</li> <li>• Fedorova DD, Nazarova DS, Avetyan DL, Shatskiy A, Belyanin ML, Kärkäs MD, <b>Stepanova EV</b>. Divergent Synthesis of Natural Benzyl Salicylate and Benzyl Gentsiate Glucosides. Journal of Natural Products. 2020 Oct 3;83(10):3173-80.</li> <li>• Romanova DA, Avetyan DL, Belyanin ML, <b>Stepanova EV</b>. Synthesis of Salicaceae Acetyl Salicins Using Selective Deacetylation and Acetyl Group Migration. Journal of natural products. 2020 Mar 19;83(4):888-93.</li> <li>• <b>Stepanova EV</b>, Nagornaya MO, Filimonov VD, Valiev RR, Belyanin ML, Drozdova AK, Cherepanov VN. A new look at acid catalyzed deacetylation of carbohydrates: A regioselective</li> </ul>	

	synthesis and reactivity of 2-O-acetyl aryl glycopyranosides. Carbohydrate research. 2018 Mar 22;458:60-6.
--	---