

Latvian Institute of Organic Synthesis (OSI)

Aizkraukles 21, Rīga LV-1006, Latvia

At a glance

- **Focus areas:** Antiinfective, cardiovascular, anticancer and Central Nervous System (CNS) drug discovery and development
- **Lead discovery and optimization:** Synthetic hit-to-lead & lead optimization; Structural biology; Biochemical & biophysical screening; Fragment based lead discovery; Natural product inspired lead discovery; *In silico* drug design
- **Pharmacology:** New drug targets, mode of action; *In vitro*, *ex vivo*, *in vivo* efficacy models; *In vitro* ADMET; *In vivo* PK and toxicity; Bioanalytical assays
- **Process chemistry:** Route scouting; Process scale-up; Kg-scale synthesis; Impurity profiling

Infrastructure and technical focus

- More than 5000 m² of fully equipped labs for medicinal/organic chemistry, pharmacology, and protein expression. EU-compliant animal facility
- Biophysical chemistry equipment including high-field NMRs, SPR and ITC
- Centrally operated analytical equipment including open access NMRs; X-ray; HRMS; tandem MS; microanalysis, FT-IR, and various chromatography equipment
- Kilo-scale facility including reactors (up to 63 L) and necessary auxiliary equipment



Dr. Osvalds Pugovičs (Director)

„EU-OPENSREEN membership offers us a unique opportunity to contribute our drug discovery expertise addressing major health challenges. This platform enables networking with leading experts comprising state-of-the-art knowledge and infrastructure.“

Projects past and present

2020-2025 | ERA4TB European Regimen Accelerator for Tuberculosis

2020-2023 | SPRINGBOARD Springboard for excellence in advanced development of antibacterials

2020-2023 | InterTAU Integrative Structural Biology of Pathological tau Protein, an Appealing Therapeutic Target for Alzheimer's Disease Modifying Drugs

2019-2022 | FAT4BRAIN Networking for excellence in functional pharmacology to study the role of fatty acid metabolism in neurological disorders

Our science in selected publications

Development of oxathiino[6,5-b]pyridine 2,2-dioxide derivatives as selective inhibitors of tumor-related carbonic anhydrases IX and XII

➤ [European Journal of Medicinal Chemistry 2020, 200, 112300](#)

Fused isoselenazolium salts suppress breast cancer cell growth by dramatic increase in pyruvate-dependent mitochondrial ROS production

➤ [Scientific Report 2020, 10, 21595](#)

Bacterial Sortase A with Covalent Inhibitors: 27 New Starting Points for Structure-Based Hit-to-Lead Optimization

➤ [ACS Infectious Diseases 2020, 6, 186-194](#)

Exploiting Structural Dynamics to Design Open-Flap Inhibitors of Malarial Aspartic Proteases.

➤ [Journal of Medicinal Chemistry 2019, 62, 8931-8950](#)

Further info and site-contact

Dr. Aigars Jirgensons: aigars@osi.lv | +371 (0) 67014948

Website: <https://www.osi.lv/en/>

