# ABSTRACT

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**Title of diploma thesis:** Design and synthesis of isothiazolidinone-based DDl inhibitors

This work is focused on D-Ala-D-Ala ligase (DDl), enzyme in alanine side pathway of the bacterial cell wall synthesis. Potential DDl inhibitors were designed with the help of docking software (AutoDock 4.05, The Scripps Research Institute, La Jolla, USA), X-ray structures of DDl (1IOW and 1IOV, PDB), its natural substrates/products and known published inhibitors. This work is a part of the project EUR-INTAFAR (Inhibition of New TArgets for Fighting Antibiotic Resistance) aiming at better understanding of the physiology and biochemistry of bacterial cell morphogenesis and peptidoglycan biosynthesis and the discovery of new antibacterial agents. According to the *in silico* design, five final compounds were synthesized with isothiazolidinone core and evaluated in the biological assays to determine their DDl inhibitory potency.