

## **Abstract**

The main topic of this diploma thesis is ARE (resistance) proteins from the ABC-F family of the second class of ABC proteins. ARE proteins confer resistance to antibiotics that bind to a large ribosomal subunit and therefore inhibit proteosynthesis. One of the ARE proteins is the Lmr (C) protein, which is part of the linkomycin biosynthesis cluster of *Streptomyces lincolnensis*, and according to new results, Lmr (C) does not have to be just resistant protein but may have also regulatory function. We decided to study Sco0636, the closest homologue to Lmr (C) in *Streptomyces coelicolor*, which is a model organism in the study of secondary metabolism. Thanks to the production of color pigments, it is possible to monitor the effect of ARE proteins on secondary metabolism directly on the plates. I prepared the deletion mutant and the strain with constitutive expression of sco0636, and observed the effect on the phenotype. I followed the production of a blue asset and set a minimum inhibitory concentration to selected antibiotics, which bind to the ribosome.

I have found that Sco0636 gives high resistance to tiamulin and so it has been named TiaA. The deletion of gene sco0636 accelerated production of actinorodine, and constitutive expression of this gene slowed down production.

**Keywords:** ABC proteins, ABC-F proteins, Lmr (C), translation, resistance to antibiotics, *Streptomyces coelicolor*, actinorhodine