

*Streptomyces* are free-living, non-pathogenic bacteria undergoing complex life cycle. They are producers of an amazing variety of biologically-active compounds, including numerous antibiotics (approximately 60% of naturally obtained antibiotics are *Streptomyces*-produced), fungicides, cytostatics and many others. In their environmental niche (typically soil) *Streptomyces* encounter various stresses. To adapt to the changed conditions they adjust their gene expression, producing proteins which would help to survive in unfavourable conditions. For such transcriptional regulation *Streptomyces* employ dozens of two-component systems. These systems consist of a membrane receptor protein which detects the signal usually from the outside of the cell, and a response regulator - cytoplasmic protein which, when activated by the receptor, induces expression of certain genes.

In the proposed project we plan to dissect the role of the novel two-component system, SatKR, which regulates expression of genes engaged in control of growth of *Streptomyces* but also of other bacteria species living in their neighbourhood. We believe that proposed study will provide the complex information on the role of this novel two-component systems in stress response. Since *Streptomyces* are important antibiotic producers, it is pivotal to explore regulation of their gene transcription and potentially use this information for more efficient employment of these bacteria in the pharmaceuticals production.