

P007 *In vitro* binding of Ss-LrpB from *Sulfolobus solfataricus* to potential target sites

Amelia Vassart,¹ Eveline Peeters,¹ Liesbeth van Oeffelen² and Daniel Charlier¹

¹Erfelijkheidslcer en Microbiologie, Vrije Universiteit Brussel, Belgium and ²ESAT-SCD, Katholieke Universiteit Leuven, Belgium.

Ss-LrpB is a transcriptional regulator from *Sulfolobus solfataricus* belonging to the bacterial/archaeal Lrp family. This regulator binds the control region of its own gene, which indicates an autoregulation. Based on the identified binding sites in the *Ss-lrpB* control region, the DNA-binding sequence specificity of the regulator was studied extensively. Using this information, the *S. solfataricus* P2 genome was scanned for the occurrence of other potential regulator target sites. Several potential binding sites were found in promoter regions of genes encoding proteins with different functions. This list includes a pyruvate ferredoxin oxidoreductase, two permeases, and several purine biosynthesis enzymes. The physiological relevance of these potential targets was tested experimentally. *In vitro* binding of Ss-LrpB was demonstrated for a subset of the *in silico* predicted targets. Interestingly, different types of organization of 15 bp-binding sites were found. The spacing between the binding sites and the promoter elements is highly variable. Possibly, Ss-LrpB is capable of performing different types of regulatory mechanisms. In all promoter regions there is an occurrence of multiple binding sites (combination of low- and high-affinity sites) pointing out the importance of cooperative binding by the regulator.