

P005 Characterization of the physiological role of an Lrp-like transcriptional regulator of *Sulfolobus solfataricus*
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Transcription in archaea resembles closely the eukaryotic process but is regulated by bacteria-like regulators. Only a limited number of archaeal transcription regulators have been studied, most of which belong to the bacterial/archaeal Lrp family of regulators. The physiological role of most characterized archaeal Lrp-like regulators remains elusive. Here, we unravel the function of Ss-LrpB of *Sulfolobus solfataricus*.

Several potential targets for Ss-LrpB were identified *in silico* by binding site analysis, including an operon encoding pyruvate ferredoxin oxidoreductase (*porDAB*) and two genes encoding putative permeases. *In vitro* binding studies of Ss-LrpB demonstrated cooperative binding at three target sites in the *porDAB* control region. In contrast, at low Ss-LrpB concentrations, binding to the control regions of the two permease genes occurs at a single binding site relatively far upstream and extends further downstream at higher protein concentrations. Transcription of the *porDAB* and permease genes was lower in an *Ss-lrpB* gene disruption mutant. Therefore, Ss-LrpB functions as an activator for all these promoters, although the binding relative to the promoter and possibly also the corresponding molecular mechanism of gene regulation appears to be different for the permease genes and for *porDAB*.