

## Resolving the DNA interaction of the MexR antibiotics resistance regulatory protein

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Small Angle scattering is a powerful tool for analysing the shape and conformational changes of macromolecules; in particular, protein-DNA complexes need to be highly dynamic in order to be able to respond to external factors for the regulation.

Acquired multidrug resistance (MDR) in pathogenic microbials is a worldwide threat to human health. Several MarR-like proteins regulate the expression of efflux pumps, which are multiprotein self-assembly complexes actively extruding High toxic compounds to the host organism. Since incapacitating the repressor protein leads to continuously high production of the efflux proteins and thus increased survival for the bacteria, there is high mutational pressure for acquired MDR; MexR is a crucial member of the MarR family.

According to the DNA binding site for MexR dimer appears to involve an inverted repeat of the sequence; furthermore, it is possible to identify two closely locate bindings fragments, dubbed as PI and PII. In this work, we will use SANS to reveal the structure of the protein-DNA complex of MexR with its PII and entire (PI+PII) operator regions. This analysis is an essential step for the comprehension of the binding of MarR family proteins with DNA because very few of those proteins have crystallised with DNA and none with two dimer sites. The ongoing analysis will apply to the entire MarR family, and thus provide critical knowledge on pathogenic bacteria, of relevance for clinical understanding and future drug design.

### Level of Expertise

Student

### Speakers Gender

Female

### Do you wish to take part in the poster slam

Yes

Primary authors: CAPORALETTI, Francesca (Linkopings universitet & institut Laue Langevin); Prof. SUNNERHAGEN, Maria (Linkoping University)

Co-authors: Dr MARTEL, Anne (ILL); Prof. WALLNER, Bjorn (Linkoping university)

Presenter: CAPORALETTI, Francesca (Linkopings universitet & institut Laue Langevin)

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