

## Poster Presentation

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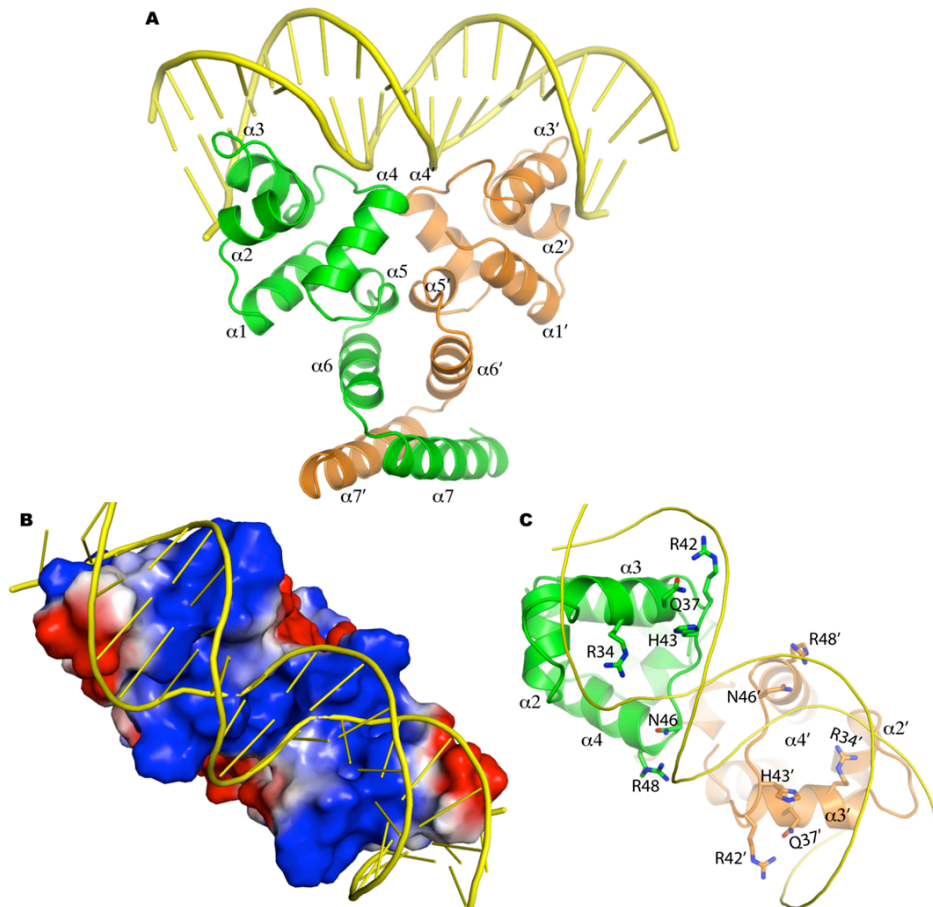
### *BswR controls bacterial motility and biofilm formation via modulation RNA rsmZ*

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*Pseudomonas aeruginosa* relies on cell motility and ability to form biofilms to establish infections, however, the mechanism of regulation remains obscure. Here we report that BswR, a XRE (Xenobiotic Response Element) type transcriptional regulator, plays a critical role in regulation of bacterial motility and biofilm formation in *P. aeruginosa*. Transcriptomic and biochemical analyses showed that BswR counteracts the repressor activity of MvaT, controls the transcription of small RNA rsmZ and regulates the biogenesis of bacterial flagella. The crystal structure of BswR was determined at 2.3 Å resolution; the monomer comprises a DNA-binding domain with a helix-turn-helix (HTH) motif in the N terminus and two helices (6 and 7) with a V-shaped arrangement in the C-terminus. In addition to the contacts between the parallel helices  $\alpha 5$  of two monomers, the two helical extensions (6 and 7) intertwine together to form a homodimer, which is the biological function unit. Based on the result of DNase I protection assay together with structural analysis BswR homodimer, we proposed a BswR-DNA model, which suggests a molecular mechanism with which BswR could interact with DNA. Taken together, our results unveiled a novel regulatory mechanism, in which BswR controls the motility and biofilm formation of *P. aeruginosa* by modulating the transcription of small RNA rsmZ.

[1] C. Wang, F. Ye, V. Kumar, Y. Gao, L. Zhang. *BswR controls bacterial motility and biofilm formation in Pseudomonas aeruginosa through modulation of the small RNA rsmZ*. *Nucleic Acid Research*, 2014. In Press (doi:10.1093/nar/gku106).



**Keywords:** BswR, XRE-type transcriptional regulator, Crystal structure, Small RNA, Biofilm formation, Swarming