

**[C1-1]**

## **Structural and Functional Analysis of the *Vibrio vulnificus* SmcR, a Quorum Sensing Regulator**

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*Vibrio vulnificus* SmcR is a homologue of *V. harveyi* LuxR which regulates numerous genes in quorum sensing system. In this study, a set of mutant SmcRs was constructed and their dimerization and DNA binding activities were analyzed using bacterial two hybrid system and EMSA, respectively. Among 11 mutations in C-terminal domain, mutations with Y171A substitution or L165A and Y193A double substitutions resulted in most detrimental effects on dimerization. To analyze DNA binding domain, 13 substitution mutations and one deletion mutation were introduced into N-terminal DNA binding domain of SmcR, and the resulting mutant SmcRs were purified. EMSA with the *vvpE* upstream region revealed that mutant with the deletion of 2<sup>nd</sup>~11<sup>th</sup> residues and mutants with R11A and F54A were completely defective for DNA binding. The activities of the mutant SmcRs were reexamined *in vivo* using P<sub>*vvpE*</sub>::*lacZ* or P<sub>*VV2\_1398*</sub>::*luxAB* fusion. The results suggest that N-terminal domain is essential for DNA binding while C-terminal domain is mainly involved in its dimerization.

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