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# Functional Domain Determination of Global Regulatory Gene, afsR2 that Simulates Antibiotic Production in Sterptomyces lividans

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The afsR2 is a global regulatory gene that controls the production of actinorhodin, and undecylprodigiosin in Streptomyces lividans TK21. The afsR2 gene locates immediately 3' to afsR and encodes a 63 amino acid protein. The transcription of afsR2 is believed to be regulated by the phosphorylated AfsR protein which binds to the promoter region of afsR2. The nucleotide sequences of afsR2 revealed two putative important domains; the domain containing direct repeats in the middle and the domain homologous to sigma factor sequence in the C-terminal end. In this work, we constructed various sized afsR2-derivatives and compared the actinorhodin stimulating effects in S. lividans TK21. The experimental data indicate that the domain homologous to sigma factor sequence in the C-terminal end of afsR2 plays a critical role as an antibiotic stimulating function. In addition, we also observed that the single copy integration of afsR2 regulatory gene into S. lividans TK21 chromosome significantly activates antibiotic overproduction.