

S3-4

TRANSCRIPTION REPRESSION MEDIATED BY PROTEIN-PROTEIN INTERACTION

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It has been conventionally perceived that bacterial transcription repression is established by steric hindrance mechanism. Whereas, transcription activation is via protein-protein interaction between RNA polymerase and transcription activator. However, there has been increasing number of findings suggesting that the transcription repression is also via the same protein-protein interaction between the repressor and RNA polymerase. In this case, the interaction should result in the conformational change in RNA polymerase leading to transcription repression. In this talk, I present evidence 1) Gal repressor interacts with the α subunit of RNA polymerase at *galP1* (in *E. coli*) and the repression is at a step prior to open promoter complex formation (RPO) but not at the RNA polymerase binding step (RPc); 2) CytR repressor alters the transcription activator, CRP, binding next to *cytO*, which then represses transcription initiation from *deoP2* (in *E. coli*) at a step subsequent to RPc formation. It, therefore, is likely that the protein-protein should be important mode of regulation for not only the transcription activation but also the transcription repression.

S4-1 BIODEGRADATION OF BIPHENYL AND CATECHOLIC COMPOUNDS BY A GEM STRAIN, *PSEUDOMONAS* SP. DJP-120

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There was a bacterial strain which was called the DJP strain, before the so-called DJP joint-government of Korea was inaugurated in 1998. The strain newly made by genetic engineering techniques was reported in the International Symposium on Environmental Engineering (Wm-S06) organized by Pohang University of Science and Technology in September 28 to October 1, 1997. The name of the new GEM strain was originated from its parents names as a result of molecular recombination of their degradation genes. They were *Pseudomonas* sp. DJ-12 (Kor. J. Microbiol. 25:122-128, 1987) and *Pseudomonas* sp. P20 (Kor. J. Microbiol. 30:53-59, 1992) which were isolated from the wastewaters of Daejeon and Cheongju industrial complexes, respectively. The 2,3-dihydroxybiphenyl dioxygenase gene of *Pseudomonas* sp. P20 was cloned to construct pKK1 recombinant plasmid. The pKK1 in the cloned cells of *E. coli* KK1 was transferred into *Pseudomonas* sp. DJ-12 by conjugation. The resulting transconjugant, *Pseudomonas* sp. DJP-120, revealed higher biodegradability and survival stability. Its specific activity for biphenyl degradation was increased by 23.7 folds over its mother strain. Its degradation activities to catechol and 3-methylcatechol were also increased by 3.5 and 4.8 folds, respectively.