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Molecular cloning of the *arg*E, *arg*C, and *arg*B genes from *Corynebacterium glutamicum*

Jae-Yeon Chun and Myeong-Sok Lee
Department of Biology, Sookmyung Women's University
Seoul 140-742, Korea

Complementation cloning of the *arg*E, *arg*C, and *arg*B genes in *Corynebacterium glutamicum* was performed by transforming DNA library into the corresponding arginine auxotrophs of *Escherichia coli*. The recombinant plasmid containing 6.2 kb fragment complementing the *E. coli arg*B mutant was also able to complement the *E. coli arg*C and *arg*E mutant, indicating the clustered organization of the three genes within the DNA fragment. This insert DNA of the recombinant plasmid termed pRB2 was physically mapped with several restriction enzymes. We also cloned other *arg* genes in *C. glutamicum* including *arg*A gene. We want to determine the molecular structure and organization of the three clustered genes. Our long term goal is to genetically engineer *C. glutamicum* which produces more arginine than a typical strain.

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Reorganization of chromatin conformation from an active to an inactive state after cessation of transcription

Myeong-Sok Lee and William T. Garrard[1]
Department of Biology, Sookmyung Women's University, Seoul 140-742, Korea
and [1]Department of Biochemistry, University of Texas
Southwestern Medical Center, Dallas, TX 75235 USA

Taking advantage of the heat inducible *HSP82* gene in yeast, chromatin structure after transcription cessation was investigated. Alteration of chromatin conformation within the *HSP82* gene into an active state has been shown to correlate with its transcriptional induction. It was thus of interest to examine whether the active chromatin state within the *HSP82* gene could be maintained or erased after cessation of the transcription. Based on *HSP82* mRNA analysis, the gene ceased its transcription within a few hours of cultivation at a normal condition after heat induction. In this condition, an active chromatin conformation in the *HSP82* gene was changed into an inactive state which was revealed by DNase I resistance and by typical nucleosomal cutting periodicity in the corresponding chromatin. These results thus ruled out the possibility of a long-term maintenance of the DNase I sensitive chromatin after transcription cessation. DNA replication may be a critical event for the chromatin reprogramming.