

Phosphate starvation response in *Escherichia coli* revealed by DNA microarray and fluorescence resonance energy transfer analyses

최슬, 백종환, 강연재, 이상엽*
한국과학기술원
(leesy@kaist.ac.kr*)

Phosphorus is an essential source of various biomolecules, and has an important role in signal transfer pathways. The response to phosphate starvation is known to be controlled by PhoR-PhoB two-component regulatory system in *Escherichia coli*. In this study, changes of global gene expression levels were investigated using DNA microarray, followed by real-time PCR analyses. Base on transcriptome analysis, novel gene members in the Pho regulon could be identified by further sequence analysis and reporter gene assay. The protein-protein interactions among related regulators were also observed in vivo using fluorescence resonance energy transfer (FRET) analysis. This combined analysis at transcriptome and protein levels helps to understand the detailed response to phosphate starvation depending on time, phosphate concentration and related regulators in *E. coli*. [This work was supported by the Korean Systems Biology Research Program from the Ministry of Science and Technology. Further supports by LG Chem Chair Professorship, Microsoft and IBM SUR program are appreciated.]