

Engineering outer membrane anchoring motifs of *Escherichia coli* OmpX for bacterial surface display systems

안슬지, 한미정¹, 이상엽, 정기준*
한국과학기술원; ¹동양대학교
(kijeong@kaist.ac.kr*)

Bacterial cell surface display is one of the most powerful tools which have various applications including protein engineering, whole cell biocatalist, biotherapy with antibody or vaccine, biosensor etc. In the bacterial cell surface display system, it is the most important step to choose the appropriate anchoring motif which is linked to target molecules. To discover new anchoring motif which allows more stable and efficient protein display on bacterial cell surface, we first analyzed the outer membrane proteome of *E. coli*. Based on proteome analysis, we chose outer membrane protein X (OmpX) which has a small (16.3 kDa), monomeric and β -barrel structure with high expression level. The usefulness of OmpX as an anchoring motif for cell surface was demonstrated with two important industrial enzymes, lipase and endoxylanase. By fusion with truncated OmpX, both lipase and endoxylanase showed the efficient display and also showed higher activities than those in free-state. These results revealed that use of OmpX as an anchoring motif provide an efficient way for displaying functional enzymes on the surface of *E. coli* host and can be used for many other applications of *E. coli* cell surface display such as high throughput screening method in development of antibody.