# Display of Polyhistidine and Lipase on the Surface of *Escherichia coli* by using the *Salmonella* OmpC as an Anchoring Motif and its Application to bioconversion

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Cell surface display allows peptides and proteins to be displayed on the surface of microbial cells by fusing them with the anchoring motifs. Its possible applications include: (i) live vaccine development (ii) antibody production (iii) peptide libraries screening (iv) environmental bioadsorbents development (v) whole cell catalysts construction and (vi) biosensor development. In this study, we developed a novel cell surface display system for the display of proteins on the surface of *Escherichia coli* using the *Salmonella typhimurium* outer membrane protein C (OmpC) as an anchoring motif. A C-terminal deletion-fusion strategy was employed to fuse the polyhistidine peptides and recombinant proteins to the C-terminal of the functional portion of OmpC. The polyhistidine peptides of up to 243 amino acids could be successfully displayed on the *E. coli* cell surface, which allowed recombinant *E. coli* to adsorb up to 34.2 (mol of $Cd^{2+}$ per gram dry cell weight. The *Pseudomonas* lipase of up to 470 amino acids could also be displayed with an activity up to 1140 units per gram dry cell weight. We also report for the first time the use of cell surface displayed lipase for chiral resolution. These results suggest that the C-terminal deletion-fusion strategy employing the *S. typhimurium* OmpC as an anchoring motif is a suitable for the display of large proteins on the surface of *E. coli.*

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## References

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