

### Proteome-level Identification of Envelope Proteins in Response to Acid or Alkaline Stresses in *Escherichia coli* K-12

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Perturbations in pH induce different subsets of proteins such as stress proteins, redox modulators and envelope proteins, and thereby can exert many significant effects on cellular growth and survival. In this study, the changes of membrane proteins in *E. coli* under various pH stresses have been studied by using 2-DE following nanoLC-MS/MS. Among a total of 173 membrane protein spots that were consistently detected, 30 spots were enriched in *E. coli* membranes at low pH, whereas 15 spots were more abundant in the membranes at high pH. The low pH responsive proteins included inner membrane proteins, membrane-associated proteins, outer membrane proteins and flagellum filament protein. At high pH, most of the outer membrane proteins were decreased. This study suggests that the different pH might induce drastic changes in composition and structure of *E. coli* membrane. [This work was supported by the Korean Systems Biology Research Grant (20090065571) of Ministry of Education, Science and Technology (MEST) to S.Y. Lee through the National Research Foundation (NRF) and the Converging Research Center Program from the NRF (2009-0093652) to M.-J. Han]