

Differential gene regulations in cold shock and heat shock response of *Bacillus subtilis*

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The differential gene expression patterns of *B. subtilis* under cold shock and heat shock were examined with time series microarray data. The genes showing differential expression pattern under cold shock and heat shock were 680 and 625 genes, respectively, among total 4000 genes on the microarray. From these genes 99 genes and 25 genes were selected for the estimation of gene regulation networks in the cold shock and heat shock, respectively. Regulation networks were estimated using R package called corpcor, which was based on partial correlation method. Among selected genes for the estimation of regulation networks, cold shock specific genes and heat shock specific genes were 49 and 15, respectively, while 5 genes showed differential gene expression patterns in both thermal shocks. The estimated networks suggest that *B. subtilis* might require more gene regulations in cold shock than heat shock.