F336 Salt Effect on *Escherichia coli* GroE Induction

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It is known that a lot of stresses induce GroE inducion under the control of σ^{32}. Effect of sodium chloride on GroE induction was determined in this study, using *groE-lacZ* fusion in the chromosome or on the plasmid. In this system, salt effect was determined just within 30 min after salt stress was given, by measuring β-galactosidase activity. When the strain carrying *groE-lacZ* fusion was stressed with various concentrations of sodium chloride, β-galactosidase was induced to levels in a salt-concentration dependent manner. When the strain carrying *groE* (GATCAGAAT$_8$CTT deletion mutant)-*lacZ* fusion on the plasmids was stressed with sodium chloride, GroE induction was less than in *groE* (wild-type)-*lacZ* fusion, suggesting that the deleted portion of *groE* promoter is important in stress induction. The *groE-lacZ* fusion strain can be also used to determine effect of other stresses conveniently.

F337 The difference of *hilA* expression between *Salmonella typhimurium* UK1 and SL1344

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Expression of *Salmonella typhimurium* Pathogenicity island1(SPI-1) encoded at centisome 63 is activated by the transcription factor HilA. *hilA* expression is regulated in response to many environmental conditions, including oxygen, osmolarity and pH. As a initial experimental strain, wild type *S.typhimurium* UK1 was selected because this strain is highly virulent and invasive. But $hilA^{UK1}$-*lac* fusion constructed was rarely expressed in optimal expression condition. Another wild type strain SL1344 *hilA* was highly expressed in anaerobic, high osmotic conditions unlike UK1. To investigate a cause that induces the difference of expression, $hilA^{UK1}$-*lac* fusion was transduced in SL1344 background and $hilA^{SL1344}$-*lac* fusion in UK1. β-galactosidase activity was examined under same conditions and unexpectedly found that $hilA^{SL1344}$-*lac* fusion in UK1 background was highly expressed but $hilA^{UK1}$-*lac* fusion in SL1344 background was rarely expressed. Consequently, a cause that induces the expression difference is implicated to be within *hilA* DNA sequence. To confirm this result, we first tested the change of *hilA* expression dependent on growth state using *hilA* promoter *lac* fusion. It is shown that *hilA* of SL1344 was significantly expressed from early log phase through to stationary phase and that of UK1 was, conversely, rarely expressed at both phases. Secondly, we conducted Northern hybridization. In case of UK1, however, the result of northern hybridization was different from that of *hilA* promoter-*lac* fusion experiment; *hilA* was actively tanscribed at mid-log phase and transcription level of UK1 was similar with that of SL1344. But *hilA* transcription level of SL1344 was still high after mid-log phase and that of UK1 was continuously reduced. Therefore, these results show that optimal expression condition and regulation of UK1 *hilA* were different from those of SL1344.