

Poster G-9

Study on the role of bgl operon of E.coli in stationary phase



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Short Abstract: We have found that the apparently cryptic bgl operon of Escherichia coli gives the organism a Growth Advantage in stationary phase. In order to find out the function of this operon, proteomics analysis is being carried out.

Long Abstract:

The bgl operon of Escherichia coli involved in the utilization of the β -glucoside sugars is classified as a cryptic genetic system as it is maintained in a silent state in the wild type organism, and manifest at the phenotypic level only after mutational activation. Evolutionarily, such cryptic genes remain an enigma. We asked whether this apparently silent system is expressed/useful to the organism under any alternative physiological conditions. Bgl⁺ mutants were isolated from 28-day-old starved cultures of Escherichia coli. One such Bgl⁺ mutant was competed with its wild type parental strain under conditions of starvation and we show that the Bgl⁺ strain has a Growth Advantage over the wild type Bgl⁰ strain in stationary phase. (i.e. Bgl⁺ strain has a GASP phenotype over wild type strain). We show that the advantage conferred by the activated bgl allele is independent of the type of activating mutation. Also an involvement of the stationary phase sigma factor, rpoS, is shown as the GASP phenotype of the Bgl⁺ strain is dependent on its rpoS status. One of the major questions now is that what is the function carried out by the bgl operon under these conditions. In order to look for any downstream targets proteomics analysis is being carried out.