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Stochasticity in the Expression of LamB and its Affect on λ phage Infection EMILY CHAPMAN, XIAO-LUN WU, University of Pittsburgh — λ phage binds to *E. Coli's* lamB protein and injects its DNA into the cell. The phage quickly replicates and after a latent period the bacteria bursts, emitting mature phages. We developed a mathematical model based on the known physical events that occur when a λ phage infects an *E.Coli* cell. The results of these models predict that the bacteria and phage populations become extinct unless the parameters of the model are very finely tuned, which is untrue in the nature. The lamB protein is part of the maltose regulon and can be repressed to minimal levels when grown in the absence of inducer. Therefore, a cell that is not expressing any lamB protein at that moment is resistant against phage infection. We studied the dynamic relationship between λ phage and *E. Coli* when the concentration of phage greatly outnumbers the concentration of bacteria. We study how the stochasticity of the expression of lamB affects the percentage of cells that the λ phage infects. We show that even in the case when the maltose regulon is fully induced a percentage of cells continue to persist against phage infection.

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