

Coping With Stress In a Synthetic World

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A major focus of synthetic biology is the engineering of gene circuits to perform user-defined functions. In addition to generating systems of practical applications, such efforts have led to the identification and evaluation of design strategies that enable robust control of dynamics in single cells and in cell populations. On the other hand, there is an increasing emphasis on using engineered systems programmed by simple circuits to explore fundamental biological questions of broad significance. In this talk, I will discuss our efforts along this line of research, whereby we have used engineered gene circuits to examine the evolutionary dynamics of two common bacterial survival strategies in stress response: programmed death and cell-cell communication.