



Rapid Dissociation of the High Affinity E9:Im9 Complex Induced by a Force-Activated Trip Switch

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Abstract:

Colicin E9 is a nuclease antibiotic produced by E.coli to target and kill competing bacteria in times of stress. Immunity protein 9 (Im9) is expressed co-translationally and binds strongly to E9, inactivating the nuclease to protect the producing cell from the cytotoxic effects of E9. The affinity between E9:Im9 is highly avid with an off-rate of the order of days. This avidity poses a biological paradox in that tight binding is required to prevent host cell death, yet rapid release is required for cell invasion and intoxication. In my seminar I will describe how single molecule dynamic force spectroscopy experiments (DFS) coupled with protein engineering and ensemble methods has been used to try and answer this paradox.

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