
Seminar

Mechanism of Chaperonin-Assisted Protein Folding: Investigation at Single Molecular Resolution

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The GroEL/GroES chaperonin system is one of the most important bacterial chaperone systems, which can fold many newly synthesized unfolded polypeptides to their active folded states. The mechanism of GroEL remains controversial whether GroEL acts as a passive cage, merely providing an aggregation-preventing micro-compartment, or whether GroEL actively accelerates the refolding of a subset of substrate proteins by modulation of the folding energy landscape. We resorted to a variety of sensitive single molecule techniques to address this controversy. Our results represent a substantial advance in our understanding of the mechanism of the prokaryotic chaperonin system and our findings suggest that GroEL, by an active chaperonin mechanism, promotes substrate protein folding by entropic destabilization of folding intermediates. Furthermore, we provide evidence that modulation of the folding energy landscape is a result not only of steric confinement during encapsulation, but also of the net negative charge of the GroEL cage wall.

Thursday, Feb 12th 2015

11:30 AM (Tea/Coffee at 11:15 AM)

Seminar Hall, TCIS