



Single-molecule folding pathways of an EF-hand calcium sensor protein and a four-helix bundle

by **Ciro Cecconi**

**CNR-Istituto Nanoscienze S3
Department of Physics, University of Modena and Reggio Emilia**

Abstract:

We used optical tweezers to study the folding mechanisms of neuronal calcium sensor-1 (NCS-1) and acyl-CoA-binding protein (ACBP). NCS-1 folds through a multi-state process involving on- and off-pathway intermediate states. The two EF-domains fold sequentially through a series of events that are regulated by calcium binding. ACBP unfolds/refolds in a two state manner and displays unusual mechanical properties as it is able to undergo significant deformation (~ 5 nm in length) before committing to unfolding. The atomistic details of the mechanical unraveling of ACBP have been studied by MD simulations.

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Room PH 227

Contact:

Prof. Matthias Rief, mrief@tum.de, phone: 089 / 289-12471