

Optical Tweezers: Force Sensors for Unzipping the Coiled-Coil EEA1

Optical Tweezers are a nowadays common tool to study the single molecule world. As force sensors, they are especially interesting to investigate binding energies and, due to their high spatial and temporal resolution, protein dynamics (e.g. polymerases). However, careful calibration of an optical tweezers setup is required in order to achieve that resolution. Berg-Sørensen and Flyvbjerg (2003) suggested a calibration method for a single trap that does not require prior knowledge of the experimental settings (viscosity, bead radius etc.). Here we present the extension of this method to dual-trap optical tweezers setups taking into account hydrodynamic interactions of the beads.

Our so calibrated setup is then used to unzip the ~200 nm coiled-coil protein EEA1 and we report the progress of these experiments.

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