



Contribution ID: 51

Type: Talk

Protein phase diagrams determined by high-pressure NMR

Thursday, 29 August 2019 12:30 (30 minutes)

The accessible free energy landscape is a generic property of proteins, which determines both their protein folding pathways and their biological function. This landscape can be explored by determining the thermodynamic stability of proteins at different pressures and temperatures. We combine these variations with NMR spectroscopy to gain molecular resolution. For two proteins (apoKti11 [1] and GB1 [2]) we could determine the pressure-temperature phase diagram, which allowed to explain the stabilization of the proteins at elevated pressures in thermodynamic (volume and entropy changes) and structural terms (conformation plasticity and pKa value changes). For apoKti11, for the first time we could disclose a hyperbolic pressure-temperature phase diagram. Pressure induced changes in the protein folding rates of GB1 derived from CPMG relaxation dispersion allocated the stabilization effect to the native state while the transition and unfolded states remained unaffected.

Primary authors: Dr KLAMT, Andi (Martin-Luther-University Halle-Wittenberg); Mr DREYDOPPEL, Matthias (Martin-Luther-University Halle-Wittenberg); Mr RAUM, Heiner (Martin-Luther-University Halle-Wittenberg); Dr WEININGER, Ulrich (Martin-Luther-University Halle-Wittenberg); Prof. BALBACH, Jochen (Martin-Luther-University Halle-Wittenberg)

Presenter: Prof. BALBACH, Jochen (Martin-Luther-University Halle-Wittenberg)

Session Classification: Biomolecules

Track Classification: Biological applications