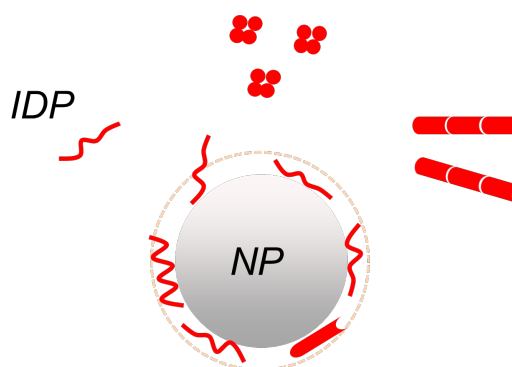


Conformational transitions of amyloidogenic proteins at nanoparticle surfaces

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A hallmark event in neurodegenerative diseases is the misfolding, self-assembly, and accumulation of peptides and proteins in the form of nanoscale amyloid fibrils.[1] Therapeutic targeting of disordered protein misfolding has generated unique challenges for drug discovery and development, also due to the complex and dynamic nature of the underlying protein conformational transitions. Because of their unique features, nanoparticles show great promise as potential artificial chaperones controlling the formation of amyloidogenic supramolecular assemblies.[2]



We studied the influence of nanoparticles on the conformational preferences of representative amyloidogenic proteins, like alpha-synuclein and tau, by use of complementary experimental techniques (calorimetry, fluorimetry, electrophoresis, CD and NMR spectroscopy). Due to their inherent plasticity, both IDPs were found to readily undergo dynamic adsorption to nanoscale surfaces, eventually involving key peptide regions associated with aberrant protein aggregation.[3-5] Current efforts are directed towards understanding possible links between nanoparticle-induced conformational transitions and aggregation propensity, to serve as a basis for the rational use of nanoparticles against neurodegeneration.

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