Towards the characterization of the plasticity of a Retinoic Acid nuclear Receptor heterodimer complexes involving an IDP

Nathalie Sibille
Centre de Biochimie Structurale (CBS)
Montpellier (France)

Intrinsically Disordered Proteins (IDPs) perform a large variety of functions that are crucial for cell regulation and maintenance. Functions performed by IDPs are complementary to these executed by globular ones indicating that the biophysical properties of disordered proteins dictate their functional mechanisms. Conformational plasticity, large solvent accessibility, and transient structuration are inherent characteristics of IDPs that are ideal to modulate signalling processes. As a consequence, the characterization of the structural features of IDPs in their free state and in complex with the relevant biological partners are crucial to reveal the molecular bases of signalling and cell control.

The biological versatility of IDPs will be exemplified with a recent study from our laboratory on a protein involved in the regulation of gene transcription. The structural and dynamic characterization of these flexible biological systems requires the integration of experimental data containing complementary information. To achieve this aim Nuclear Magnetic Resonance (NMR), Small-Angle X-ray Scattering (SAXS) and X-ray crystallography have been integrated to derive complete structural models of these multifaceted biomolecular systems.