



Vabilo na Preglov kolokvij / Invitation to the Pregl colloquium

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Velika predavalnica Kemijskega inštituta /
Great Lecture Hall, National Institute of Chemistry;
Hajdrihova 19, Ljubljana

Disentangling Puzzles – Atomic resolution Studies of Intrinsically Disordered Proteins

As the classical paradigm of structural biology states “one protein - one structure - one function”, it is generally believed that the protein structure and its function are directly interrelated. Although it is commonly true for a large number of proteins, many of them are biologically active without having a unique and stable 3D structure. Those proteins, which in their native conditions sample a multitude of diverse conformational states characterized by high spatiotemporal heterogeneity, are most often termed as intrinsically disordered proteins (IDPs) or natively unfolded (UF) proteins. With the growing evidence of their important roles in fundamental cellular processes, there is an urgent need to characterize the conformational behavior of IDPs at the highest possible level. Among of all available techniques of modern structural biology NMR represents the ultimate tool for studies of unstructured or partially disordered proteins at atomic resolution.

The lecture will review recent methodology developed in our lab to significantly shorten time needed for thorough description of unstructured or partially disordered proteins. To facilitate the atomic resolution studies, we have designed a suite of high-dimensional (4D-5D) NMR experiments, which combines ^{13}C -direct detection, non-uniform sampling, and non-standard data processing procedures to substantially enhance the attainable resolution. The power of the developed methodology is documented on studies and disorder characterization of 20 kDa delta subunit of RNA polymerase unique for gram-positive bacteria, 12.8kDa intrinsically disordered WIPs protein having a high content of proline residues (26%) in the sequence, and 49.2 kDa microtubule-associated protein 2c.



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Vljudno vabljeni / Kindly invited