

The UCLA Department of Chemistry and Biochemistry
Special Biochemistry Seminar



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presenting

“Order in Disorder – Atomic Resolution Studies of Unstructured Proteins”

NMR represents the ultimate tool for studies of unstructured or partially disordered proteins at the atomic resolution. In principle, intrinsically disordered proteins can be assigned using a standard set of triple-resonance NMR experiments applied to ^{13}C , ^{15}N -labelled samples. However, combination of the structural disorder with a high incidence of sequential repeats often results in spectra with severely overlapped peaks, impossible to assign by the traditional approach. The lecture will review recent developments from 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.

References:

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