

Seminar

Solid state NMR studies of a Prokaryotic Cytoskeletal Protein ParM in its Filamentous State

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Cytomotive cytoskeletal proteins, form filaments that play a fundamental role in the movement of other molecules within cells. Their homologs in bacterial and archaeal cells also perform a diverse set of functions. Amongst these, ParM, the focus of this thesis, is a bacterial actin homolog that plays a critical role in plasmid segregation through an ATP-driven polymerization and depolymerization pathway. Its similarities in structure and function to actin, as well as a limited set of regulators, make it an excellent minimal system to further our understanding of the structural and dynamic basis of polymerization, depolymerization, and regulation in these cytoskeletal systems. Solid-state NMR is an ideal technique to study these filamentous, non-crystalline assemblies in their native state under functionally relevant conditions. In this thesis, we have employed fast magic-angle spinning solid-state NMR techniques to tackle the challenge of obtaining residue-specific insights into ParM filaments and lay the foundation for understanding the dynamics of proteins that exhibit this ATP-dependent cytomotive activity.

Thursday, Jun 25th 2026

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Auditorium, TIFRH