Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad - 500107

Students' Annual Seminar

Subhendu Pandit

Title 1: How does benzene binds to the buried cavity of L99A T4 Lysozyme

Bacteriophage T4 Lysozyme has been extensively studied for protein folding and stability. Mutation of 99th leucine to alanine creates a cavity which can accommodate hydrophobic ligands like benzene, toluene, indole etc.[1] Despite a good structural understanding, it is still elusive how benzene enters into the solvent inaccessible buried cavity. We have tried to understand how does it actually happens by computer simulation and NMR spectroscopy[2]. In my talk I will give a brief description what we have found from our study.

Title 2: Insight into the switching machinery of Spliced Leader RNA from Leptomonas collosoma

Large conformational changes in secondary and tertiary structures are often related to the function of biological macromolecules like protein and RNA. Riboswitches, are non-coding RNA sequences present at the upstream of mRNA which regulate gene expressions by conformational changes in response to certain metabolites. It's of worth interest to study these conformational changes in order to understand how they function in vivo. Nuclear Magnetic Resonance is sensitive to these conformation exchange over a wide range to timescales (picoseconds – seconds). The system I am interested in is Spliced Leader RNA (200nt) from an organism, Leptomonas collosoma. 5' half of the RNA (56 nt) is known to exist in two alternative secondary structures[3] which inter-convert between each other in solution[4]. We are interested to study the mechanism of the inter-conversion and how the intermediate(s) (if any) look like.

References:

1. Eriksson A. E., Baase W.A., Wozniak J. A., Matthews B. W., Nature 1992, 355, 371-373.
2. Mandal J., Ahalawat N., Pandit S., Vallurupalli P., PLOS Computational Biology 2018, 14(5), e1006189.
3. LeCuyer K. A., Crothers D. M., Biochemistry 1993, 32, 5301-5311.
4. LeCuyer K. A., Crothers D. M., Proceeding National Academy of Scinces USA, 1994, 91, 3373-3377.

Tuesday, Jul 10th 2018

4:00 PM (Tea/Coffee at 3:30 PM)

Seminar Hall, TIFR-H