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

Seminar

NMR studies on Biomolecular Interactions and Methodologies for Speeding up Resonance Assignment in Proteins

Janeka Gartia

TCIS, Hyderabad

Protein digestion in insect gut is inhibited by plant protease inhibitors (PIs) that impair larval development, reducing the overall fitness of insect population and their impact on crops. Till date, little is known about the 3D structures of PIs from Capsicum annuum (CanPIs), which inhibit Helicoverpa armigera gut proteases. Recently, three pepper plant inhibitory repeating domains (IRD7, IRD9 and IRD12; also called CanPIs) are shown to be potent inhibitors. Recombinant production of these disulfide-rich peptides is challenging due to the possibility of large number of disulfide bond isomers. In my PhD, I was successful in cloning, overexpressing and purifying these CanPIs for the first time and further compared their activity in-vitro and in-vivo. I determined their 3D structures with a view to select the best candidate for future development as a bio-insecticide. In the first half of my synopsis, I will discuss the detailed structural characterization, dynamics and biomolecular interactions of these IRDs using NMR spectroscopy. The second half of my talk would focus on my attempts in development of methods for speeding-up sequence specific resonance assignments in proteins.

Monday, Nov 19th 2018

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

Seminar Hall, TIFR-H