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

Internal Seminar

Structural characterization of a cataract-active mutant of human γS Crystallin

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Cataract, or opacification of the eye lens, is the leading cause of blindness world over. While age-related cataract is the result of accumulation of environmental and metabolic effects, congenital cataract, seen in newborn children, is essentially genetic in origin. A mutant of human γS-crystallin, G57W, has been recently reported in a Chinese family wherein a young boy and his mother were found to have cataract in the center of the lens. We attempted to structurally characterize the G57W mutant and study its dynamics by solution NMR. In this endeavour, a suite of heteronuclear 2D and 3D NMR experiments with uniformly 13C/15N-labelled γS-G57W has enabled almost complete sequence-specific ^{1}H, ^{13}C and ^{15}N resonance assignments. Unfolding kinetics of γS-G57W upon heating and addition of chemical denaturants revealed γS-G57W to be less stable compared to its wild-type. Efforts are on to study the inter-domain interactions in γS-G57W and to understand the mechanism of cataractogenesis, since it is not clear as to how a single point mutation in γS-crystallin compromises eye lens transparency and packing, and finally causes cataracts.

Tuesday, Oct 3rd 2017

02:00 PM (Tea/Coffee at 01:45 PM)

Auditorium, TIFR-H (FReT-B)